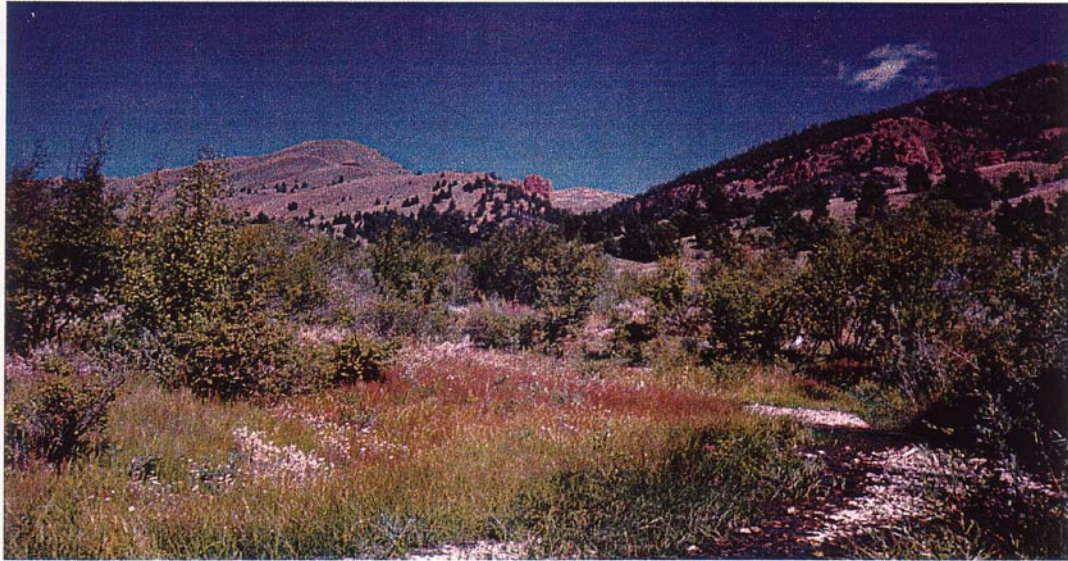


Medicine Lodge Subbasin Review

Portions of Clark and Jefferson Counties



**United States Department of the Interior
Bureau of Land Management
Upper Snake River District
Idaho Falls Field Office**

and



**United States Department of Agriculture
Forest Service
Caribou-Targhee National Forest
Dubois Ranger District**

April 2001

Medicine Lodge Subbasin Review

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Chapter 1. Introduction and Project Description

Introduction

Ecosystem review at the watershed scale, or subbasin review is called for under the Interior Columbia Basin Ecosystem Management Project (ICBEMP), initiated in 1994. The ICBEMP was established by the Eastside Ecosystem Management Project Charter in January 1994. This charter, signed by the Chief of the Forest Service and Director of the BLM, directed both agencies to work jointly to develop and adopt scientifically, ecosystem-based strategies through which to manage all Forest Service and BLM-administered lands in the Interior Columbia Basin (ICB). Subbasin review is a mid-scale ecosystem review that links broad scale, general findings of the entire ICB to specific conditions of the 4th level watershed being reviewed.

Purpose

The purpose of this review is to effectively manage risks to the ecosystem and capitalize on opportunities to conserve and restore them. The review identifies management issues and characterizes resource attributes based on their status (condition), risks and opportunities within the watershed. The subbasin review prioritizes watersheds, and identifies where more detailed analysis (i.e. watershed analysis, site specific project, or NEPA Plan Amendment) is needed. The review defines recommendations that should initiate projects on high priority watersheds. In summary, a subbasin review is a review process of mid-scale ecosystem issues and a priority-setting document. It is not a detailed, in-depth analysis, nor is it a decision document with a paired NEPA document accompanying it.

Objectives

The following objectives are accomplished during a subbasin review:

1. Assess resource status (conditions) and risks and opportunities.
2. Understand how subbasin review area fits into the broad-scale, and prioritize for finer scale analysis needs.
3. Identify resource data gaps at the mid-scale or finer scale.
4. Use a collaborative interagency approach that prioritizes by consensus. A Core Team (internal BLM and USFS specialists) and a Collaborative Team (Points of Contact of the Core Team, other agencies and interested stakeholders) can be used. The Core Team combines the dual agency resource specialists to review the resource attributes over all BLM and FS lands together. The Collaborative Team advises, reviews and steers the Core Team in issue identification, resource attribute choices and the method of and final prioritization. The Core Team provides the science and empirical knowledge base, while the Collaborative Team ensures the issues and resource attribute lists are adequate and that desired priorities and recommendations are carried forward.

Information Used

Following is a list showing the documents used to aid writing and reviewing this Medicine Lodge Subbasin. The complete reference can be found under the References Section.

1. Medicine Lodge Resource Management Plan (USDI-BLM, 1985).
2. Riparian Inventory and Health Assessment Reports, Medicine Lodge Watershed (Hansen, P. et al, 1993-1999).
3. Riparian Monitoring Assessments located at the Idaho Falls BLM Office and at rwrp@forestry.umn.edu
4. Classification and Management of Montana's Riparian and Wetland Sites (Hansen et al, 1995).
5. 1997 Revised Forest Plan and Final EIS, Targhee National Forest (USDA-FS, 1997).
6. Status of the Interior Columbia Basin-Summary of Scientific Findings (USDA-FS, 1996).

7. An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins–Volume I-IV (Quigley, Arbelbide, et al, 1997).
8. Water Resources Data–Idaho, Water Year 1998, Volume 1 Great Basin and Snake River above King Hill. (Brennan, et al, 1998).
9. Idaho Soil Conservation Commission and Idaho Department of Environmental Quality Water Quality Data.

Team Members

Following are members for both the Core Team and the Collaborative Team:

Medicine Lodge Subbasin Review Core Team (**bold= Active Core Team**; unbold=Advisory Core Team):

| <u>BLM</u> | <u>Titles</u> | <u>USFS</u> |
|--------------------------|---------------------------------|-------------------------------------|
| Dan Kotansky | Hydrologist | Mike Philbin |
| Pat Koelsch | Fisheries Biologist | Jim Capurso |
| Glen Guenther | Rangeland Management Specialist | Rob Mickelsen (East) |
| Mike Stoddard | Rangeland Management Specialist | Phelan Whitehair (West) |
| Russ McFarling | Wildlife Biologist | Dave Stricklan/Rob Mickelsen |
| Darwin Jeppesen | Soil Scientist | John Hamann |
| Karen Rice | Ecologist (Riparian) | Dave Stricklan/Rob Mickelsen |
| Susan Murdock | Biological Technician | Dave Stricklan/Rob Mickelsen |
| Deena Teel | Ecologist (Riparian) | Dave Stricklan/Rob Mickelsen |
| Bill Boggs | Outdoor Recreation Planner | Tanya Murphy |
| Bethany Martineau | GIS Technician | Judy Warrick |
| Trish Roller | Prescribed Fire Specialist | Dave Stricklan/Rob Mickelsen |
| Felicia Burkhardt | GIS Coordinator | Judy Warrick |
| Ray Brainard | Forestry | Tanya Murphy |

Medicine Lodge Subbasin Review Collaborative Team:

Select Core Team Members

Dan Kotansky, BLM Team Lead

Dave Stricklan and Rob Mickelsen, USFS Team Lead

Dave Howell BLM for Facilitator, Notetaker

Joe Kraayenbrink, BLM Field Manager

Mac Murdock, USFS District Ranger

Clark County Commissioners

Continental Divide Watershed Advisory Group (CD-WAG)

Keith Bramwell, Clark County Ag Extension Agent

Shoshone-Bannock Tribes

Mike Donahoo, U.S. Fish and Wildlife Service (USFWS)

Troy Saffle, Idaho Division of Environmental Quality (DEQ)

Bob Martin/Don Kemner, Idaho Dept. of Fish and Game (IDFG)

Greg Taylor, Idaho Department of Water Resources (IDWR)

Lloyd Bradshaw, USDA-Natural Resources Conservation Service (NRCS)

Chapter 2. Watershed Characterization and Interior Columbia Basin Broad-Scale Linkages

Characterization Process

The subbasin review characterization process consists of gathering and describing information about the subbasin. The process begins with a general description of the subbasin, such as describing the climate and geology. The second step is to characterize each resource, describing first what the broad scale ICB resource conditions and conflicts were, then relating them to the detailed resource information specific to the Medicine Lodge Watershed. The third step is to collaboratively define the resource issues specific to the subbasin that have the largest effect on the health of this ecosystem. An example of a resource issue is the invasion of our rangeland ecosystem with noxious weeds. The fourth and last step is to identify a resource attribute that is best-suited to represent and describe the resource issues presented. The resource attributes are defined in terms of status, risk and opportunity so that they can be rated for each watershed.

Status is the condition of the resource attribute within the watershed relative to other watersheds. Risk is the likelihood of a natural or man-caused event that can further degrade the condition of the attribute in the watershed, relative to other watersheds. Opportunity is the potential of the resource attribute to improve in condition to management actions in the watershed, relative to other watersheds.

The Core Team (BLM and USFS resource specialists) mostly describe the resource conditions of the subbasin. The Collaborative Team and the Core Team both provide input on the pertinent resource issues and attributes that can best be used to define and rank the watersheds within the subbasin.

Medicine Lodge Watershed

General Description

The Medicine Lodge Subbasin encompasses 872 square miles of land in Clark and Jefferson County. The upper subbasin boundary runs along approximately 37 miles of the Continental Divide with Montana. The subbasin has a south to southeast aspect. USFS and BLM-administered lands make up 210 square miles and 342 square miles, respectively. State of Idaho managed lands make up 36 square miles, while private lands account for 271 square miles. Table 1 shows some pertinent subbasin statistics. Appendix 1 shows surface ownership by each of the watersheds, the 6th level hydrologic unit codes (HUC's), while Appendix 2 shows riparian proper functioning condition by federally-owned streambanks by 6th level HUC.

The USFS lands contain a lot of mostly open rangeland, changing to forest cover generally above 8000 feet above mean sea level. The forest cover is mostly Douglas fir, aspen, and shrubs such as juniper and mahogany. The BLM-administered lands contain mostly sagebrush-grassland communities.

Table 1. Medicine Lodge Subbasin Description

| Feature | Landowner Type | | | | | Total |
|--|----------------|--------------|------------|--------------|------------|-------|
| | USFS | BLM | State | Private | DOE | |
| Land Ownership: square miles and (%) | 210 (24%) | 342 (39%) | 36 (4%) | 271 (31%) | 13 (2%) | 872 |
| Perennial Stream: miles and (%) | 57 | 40 | 2.4 | | 0 | |

Climate

Average annual precipitation varies greatly within this subbasin due to a large range of elevations, from the top of the Continental Divide to the town of Mud Lake. The average annual precipitation throughout most of the drainage is over 25" on the Continental Divide to 10" at Mud Lake, based on the Idaho Mean Annual Precipitation Map, 1961-1990. Thirty years of precipitation monitoring at the USDA Dubois Experimental Station, representative of a mid-elevation band within the Medicine Lodge Subbasin, shows the average annual precipitation at 12.8", with an average monthly peak of 1.8" in June, and the average monthly low at 0.7" in February. The climate and landscape here is semi-arid steppe with day winds primarily from the southwest and night winds generally reversing and from the northeast.

Geology

The Medicine Lodge Subbasin includes portions of the Northern Rocky Mountain physiographic province and the Eastern Snake River Plain section of the Colombia Intermontane physiographic province. The boundary between these provinces is characterized by the distinctive rise in topography that is evidenced north of Lidy Hot Springs, Winsper, and Small.

The Northern Rocky Mountain physiographic province is characterized by a number of mountain ranges and intervening valleys that have developed on the Idaho batholith and other subsidiary igneous intrusions. These mountain ranges, which include the Beaverhead Range in the northern portion of the Subbasin, consist of metamorphic and sedimentary rocks of Precambrian to Mesozoic age that have been subjected to intensive uplifting, faulting, and folding. Within the Subbasin, most of these deformed metamorphic and sedimentary units have been covered with a veneer of volcanic rhyolite, basalt, and welded tuff that are known locally as the Edie School Rhyolite and the Medicine Lodge Volcanics.

In the late Cenozoic Era, during the later stages of the building of the mountain ranges of the Northern Rocky Mountain province, the mountain province was dissected by an extensive rifting in the earth's crust which created a broad trough that filled with volcanic rocks. This trough, which extends in an arcuate pattern across southern Idaho, is known as the Snake River Plain. The basalt flows that underlie the Snake River Plain are many thousands of feet thick. Volcanic vents or eruptive centers such as Cedar Butte, Camas Butte, and Table Butte are common in the southern third of the Subbasin.

Over much of the southern portion of the subbasin, the basalt has been covered with a veneer of wind blown sediments. In the Mud Lake/Terreton area, the basalt has been covered with lake sediments left behind as the Pleistocene age Lake Terreton evaporated, leaving Mud Lake as its remnant.

Subbasin Map

To consolidate federal ownership, the Medicine Lodge Subbasin as shown on the 4th level USGS HUC map was modified. Two changes occurred:

1. The 6th level HUC watershed south of Highway 33 was excluded since it does not drain north, is part of a large desert block of land that continues south, and contains mostly lands withdrawn by the Department of Energy (DOE).
2. The 6th level HUC watershed just east of Table Butte in the Beaver-Camas Creek 4th level HUC (#170402140101) was included in the Medicine Lodge Subbasin because it belonged to the large block of public lands to the west, and no significant drainage from this land flows into Beaver Creek.

Figure 1 shows the final Medicine Lodge Subbasin map used for this review. Figure 2 shows the current land use as a percentage of the total subbasin (Traher, 2001).

Resource Characterization, Issues and Attributes

The characterization process provided the following resource headings, attributes and issues in Table 2, and are described below.

Table 2. Resource Headings, Attributes and Issues

| Resource Heading | Attribute | Issue |
|--|---|--|
| Human Uses | Recreation Use | Public interaction with bison on public land is a concern |
| Human Uses | Motorized Access | Demand is increasing for motorized access on public lands within the subbasin |
| Riparian and Wetland Veg./Stream Channel | Riparian-Wetland/Stream Channel Functionality | Streams and riparian-wetland functions have been altered |
| Watershed and Water Quality | Water Quality | Degraded stream channels and streambanks along some streams have in the past, and continue to impair water quality |
| Fisheries | Fishery Habitat Integrity | The composition, distribution, density and status of fish populations in the subbasin have changed significantly over the 20 th century |
| Fisheries | Competition from Exotic Species | Special Status Species, such as Yellowstone Cutthroat Trout, are declining due to rainbow and brook trout introductions and colonizations |
| Wildlife | Wildlife Disturbance | Open roads and trails and the recreational use during critical seasons affect wildlife |
| Wildlife | Wildlife Connectivity/Core Habitat | Core wildlife habitat, at least one half mile or greater from motorized access or development is critical to some species |
| Wildlife | Special Status Species | Special status species do exist in this subbasin |
| Soils | Soil Erosion and Loss | Accelerated soil erosion occurs through water and wind erosion |

| Resource Heading | Attribute | Issue |
|-------------------------|--|--|
| Soils | Soil Erosion and Loss | Soils prone to mass wasting occur and are active in the watershed |
| Soils | Soil Erosion and Loss | Soil compaction occurs in the watershed, especially when soils are moist |
| Rangeland/Weeds | Rangeland Health Condition | There has been an overall reduction in herbaceous species |
| Rangeland/Weeds | Rangeland Health Condition | There has been an increase in decadent stands of sagebrush |
| Rangeland/Weeds | Weeds | There has been an expansion of existing noxious weeds |
| Rangeland/Weeds | Weeds | There is a high potential for invasion by new weed species |
| Forest | Forest Stand Condition | Tree density has increased |
| Forest | Change in Forest Ecosystem Disturbance Regimes | Structural diversity has decreased |
| Forest | Change in Forest Ecosystem Disturbance Regimes | Growth rates have decreased |

Human Uses Characterization

The subbasin has a long history of human use. Shoshone-Bannock peoples traditionally occupied and used these lands until their removal to the Fort Hall Reservation in 1907. The Shoshone-Bannock tribes and the Northwest Band of the Shoshone Nation retain treaty rights that allow access to traditional cultural properties and resources in the subbasin. The Nez Perce tribes also retain rights and interest related to their seasonal travels through the area and their association with the Nez Perce (Nee Me Poo) National Historic Trail.

The first Euro-Americans entered the subbasin in 1819. They were fur trappers led by Donald Mackenzie of the British-owned Northwest Company. They were followed by American trappers in 1824. A fierce competition developed between the upstart Americans and the English trappers, now employed by the powerful Hudson's Bay Company. The American trappers included Jedediah Smith, William Sublette, Jim Bridger, Hugh Glass, Etienne Provost and others. Peter Skene Ogden led the British trappers. This rivalry soon virtually eliminated beaver and other fur-bearing mammals from the subbasin and surrounding areas.

In 1853 Lieutenant John Mullan, United States Army, followed Medicine Lodge Creek from the Beaverhead Mountains to the Snake River Plain. He is credited with naming the creek after an Indian legend. In 1853 Isaac I. Stevens, Governor of Washington Territory, sent Lieutenant John Mullan, United States Army, to survey a railroad route from St. Mary, Montana to Fort Hall, Idaho Territory. Lt. Mullan and a small party traveled from St. Mary, down the Bitterroot River, and southeast to the Big Hole

Valley. He crossed the Beaverhead Mountains, the Continental Divide, and followed a mountain stream through a winding canyon to a shallow, marshy lake or sinks on the Snake River Plain.

Here Lt. Mullan collected a story. Many years ago Flathead, Snake, Bannock and other Indians gathered and planned a horse stealing raid against some Blackfoot Indians camped along this creek. But, before the raid they needed a place to make medicine. They built a log lodge 60 feet high on the shores of the sinks and used this structure for their ceremonies. Lt. Mullan does not say whether the medicine worked. But, the stream was now called Medicine Lodge Creek and the shallow lake is the Medicine Lodge Creek Sinks.

In 1881 Dennis Small built the first cabin on Medicine Lodge Creek. A community called Medicine Lodge was soon established near the Small cabin. It included a post-office, school and store. The post office operated until 1959. Other ranches were established by the mid 1880's. The Edie Ranch's school and post-office were established around 1900. The tiny Edie schoolhouse is still located on a ranch near Edie Creek's junction with Medicine Lodge Creek.

Grazing: During the pre-European man period, this watershed was grazed by a full suite of herbivores, including several species of camels, deer, horses, bison, rhinos and mammoths. In the post-European man period, grazing has been an important Columbia Basin economic activity since the mid 1800's. The first Medicine Lodge settlers were raising horses, cattle and other livestock by the mid 1880's. Prior to 1900 the area had been grazed largely by sheep and then in the early 1900's there was a shift from sheep dominance to cattle. The Wood Livestock Company was established in 1905 and operated until 1937. It raised sheep on several ranches within and adjacent to the subbasin and annually shipped thousands of lambs to eastern markets.

Until 1905 livestock use of public land was unregulated. The Forest Service introduced grazing allotments and grazing systems between 1905 and 1934. The Taylor Grazing Act of 1934 extended allotment-based grazing management to other public domain lands. At the present time there are 28 BLM allotments with approximately 31,713 AUM's of forage allocated in the area for grazing by domestic stock. Cattle, horses, sheep, and bison utilize the allotments, with cattle the primary grazer. The season of use is approximately May through December.

Timber Harvest: Forest management activities have occurred very rarely within the subbasin. The only recent sale activity has been in response to requests for negotiated sales for Douglas-fir sawtimber (barn boards-prior to 1980). Douglas-fir bark beetle infested trees were individually marked for the sales. Less than 1% of the total subbasin's forest has been harvested, although this is difficult to determine due to unrecorded/unreported harvesting that occurred prior to agency management. All known harvest areas were selectively logged. Past uses have been for house logs, fuelwood, rough sawn lumber, corral posts, and corral poles. Management has been and will continue to be custodial for the foreseeable future.

Recreation/Trails: Most of the recreation activities on BLM-administered public land are associated with hunting and fishing. Recreation opportunities on National Forest System land are more diverse and include hunting, fishing, backpacking, camping, pack trips and horn hunting. Webber Creek campground, with a capacity of 60 people at one time, is heavily used throughout the snow-free season and also serves as a trailhead for the Italian Peaks proposed wilderness area. The proposed wilderness contains one of the most heavily used trail systems on the Dubois Ranger District. The trails are used to access high elevation lakes for camping, hunting and fishing. Dispersed camping mainly occurs along Irving and Medicine Lodge Creeks. Use is especially high in late spring at the start of the general trout season and in the fall during hunting seasons. Horse riding and pack trips are also popular activities in the subbasin, whether for hunting, fishing or sightseeing. The subbasin has all or portions of three Game

Management Units classified by the Idaho Fish & Game Department for Big Game Hunting and other activities. The Table Butte area within unit # 63 provides hunting opportunities for deer and antelope. The Medicine Lodge Creek area which is in units #59 and #59A provide hunting opportunities for deer, elk, and antelope.

Three commercial recreation outfitters/guides operate on public land within the subbasin. One outfitter/guide, licensed for hunting in units 59 and 59A, takes clients hunting for bear (spring/fall), deer (archery, rifle or muzzle loader), elk (archery, rifle or muzzle loader), antelope, mountain goat and lion. The other two outfitters guide clients on horseback day rides, pack trips, wagon trips, and a variety of cowboy experiences such as herding cows and driving horses. One outfitter also provides guided winter cross-country skiing and snowmobile excursions.

Although the number of designated trails within the subbasin is limited, the Medicine Lodge subbasin receives significant use. Trails within the subbasin include: Webber Creek, Divide Creek, Red Canyon, Edie Spring, Crooked Creek, Myers Creek, Fritz Creek and Continental Divide Trails. All trails allow motorcycles with the exception of Edie Spring, Red Canyon, Fritz Creek and segments of the Continental Divide Trail, which are non-motorized. The Continental Divide Trail within the subbasin follows the state line from Round Timber Spring to Little Deadman. Across the middle of the subbasin, the Nez Perce (Nee-Me-Poo) National Historic Trail follows Highway 22.

Motorized Access: There has been increased use of vehicular travel on county and BLM maintained roads in the subbasin for pleasure driving to enjoy the open space and scenery that public lands provide. Medicine Lodge Creek Road, Warm Springs Road and the Table Butte Road are all examples of roads with increased use by the recreating public. Motorized recreation use is allowed on all existing BLM roads and trails except for an area north of Irving Creek which is closed to ORV travel. Designated motorized routes are posted on the National Forest. See the above section for motorized trail information.

Mining: Minerals activity in the Medicine Lodge Subbasin consists of mining on patented and unpatented mining claims as well as the removal of mineral materials from Free-Use-Permits and Mineral Material Contracts. Major mineralized areas include the Lidy Hot Springs area and the area from Fritz Creek north to the Montana border.

E.J. Wilson and Sons mine limestone and bentonite from patented mining claims just north of Lidy Hot Springs. The Wilsons operate a milling facility at Lidy Hot Springs which produces ground limestone that is sold as an animal feed supplement and bentonite that is used to line canals and reservoirs. Reserves of limestone and bentonite on their private land are sufficient to supply their needs for the foreseeable future.

The area around Fritz Creek and north to the Montana border is underlain by high grade travertine deposits. Most of the highest grade material is covered with both patented and unpatented mining claims held by FAXE KALK, which is owned by Chemical Lime Group. Other claims in the area are held by Idaho Travertine. There are several quarries in the area from which travertine will continue to be removed. Travertine from these quarries has been crushed and ground for industrial uses as well as cut and used as a facing stone.

In the 1960's, mineral exploration in the Medicine Lodge area uncovered traces of common white and chocolate-covered opal about 10 feet below ground level. Recent exploration in Cole Canyon by two individuals from Spencer, Idaho led to the discovery of white common opal with swirls of strawberry pink, vanilla, chocolate, and other colors ribboned throughout. This recent discovery has been labeled

“ice cream” opal. Unlike other opal that is volcanically formed and found in rhyolite, ice cream opal runs in veins in soil and has a calcite crust surrounding it. Two 20-acre mining claims have been filed and mining activity is occurring on Forest Service lands in Cole Canyon. Although less than one-half acre of surface disturbance would occur annually, all 40 acres are expected to be mined in the future. Reclamation concurrent with mining would limit the amount of total surface disturbance to less than 10 acres at any one time.

The disposal of mineral materials from Free-Use-Permits and Mineral Material Sales in the subbasin provides aggregate, cinders, building stone, decorative rock and bentonite for individuals as well as County and State agencies. Eight disposal areas have been authorized on BLM which have disturbed several acres per authorization. Building stone on the National Forest is disposed of in the Slate Basin—Crooked Creek area. Disposal of other, free-use materials occurs in a dispersed manner across the subbasin.

A large thrust plate that interested petroleum geologists in the 1980's underlies the subbasin. In 1985, a deep well was drilled in West Indian Creek to explore a potential gas deposit. Exploration was completed in 1986. In addition to this well, two other gas and oil wells were drilled to the northeast of this subbasin. No hydrocarbons were found in any well, and no oil and gas leases currently exist in the subbasin.

Mining activity in the subbasin currently provides employment for 6-8 individuals.

Tribal Right and Interests: The United States Government has a unique relationship with federally recognized American Indian tribes. As federal agencies undertake activities that may affect a tribes's treaty rights, property interest or trust resources, care should be taken to implement agency policies, programs and projects in a knowledgeable and sensitive manner. This should reflect the agency's respect for a tribal government's sovereignty, needs and concerns.

The basis for a tribe's legal status lies within the context of United States Constitutional provision for the federal governments authority to make treaties with other sovereign nations, and the American Indian tribes' inherent sovereignty. The treaty-making period between the United States Government and American Indian tribes ended in 1871.

A tribes legal status is also derived through Agreement with the U.S. Government, congressional and executive branch recognition of tribes and federal court interpretation of Indian Law and legal documents, e.g. treaties. The 22 federally-recognized tribes in the Columbia River Basin have a legal basis for off-reservation interest/rights maintained in their treaties' executive orders. The Federal agencies have trust obligations to address effects to tribal interests, rights and property on reservations, and are required to disclose known effects through the NEPA process.

The Shoshone-Bannock Tribes and Northwest Band of the Shoshone Nation are interested in all public lands within the subbasin. Natural resources exist here that are utilized by the tribe for religious, cultural and traditional purposes but are unidentified for this review. No specific issues requiring further analysis are identified here.

Cultural: Traditional Native American Heritage Sites and Euro-American historical sites are identified and may be used for scientific and educational purposes. No specific issues requiring further analysis are identified here.

ICBEMP trends and linkages: The ICBEMP notes increasing recreational activity on federal lands, citing over 10% per year between the years 1945 and 1970, and recreational visitor use days on Forest

Service lands increasing over 2% per year since 1980. Besides increased activity, since 1980 the basin has seen an increased diversity of recreational uses, including mountain biking, jet skiing, dude ranching and hang-gliding. The future demand for recreational activity on federal lands in this basin will increase. The recreational value of the Interior Columbia Basin will also increase because this basin has a large “supply” of recreational opportunities. Outside of Alaska, 70% of the unroaded areas $\geq 200,000$ acres occur in this basin (Quigley, Arbelbide, et al 1997).

Human Use Issues:

Recreation/Trails:

1. Public interaction with bison on public land is a concern. Increased grazing use by bison in traditional cattle grazing allotments has brought about safety concerns from the recreating public and local residents that use and live within the upper part of the subbasin. The degree of conflict/interaction among different users within the subbasin could diminish the quality of recreation experience between the non-motorized and motorized users and between the grazing users and non-grazing users. Limited access onto public land to recreate has also been an issue where private landowners have limited or blocked user access through their land to get to public land.

Motorized Access:

2. Demand is increasing for motorized access on Federal lands in the subbasin. The increase in sales of ATVs, 4-wheel drive vehicles, and snowmobiles in Eastern Idaho has correlated with the increased motorized use within the subbasin. Early spring and fall use by the public using motorized vehicles on poorly maintained wet roads/trails and off-road vehicle use can increase:

1. Potential for erosion and sedimentation
2. Wildlife and fisheries disturbance/reduction of habitat quality
3. Reduction in scenic appeal of the landscape
4. Damage to cultural resources
5. Transportation of invasive weed seed

Human Uses Attributes:

1. Recreation Uses: Many of the human uses occur throughout the subbasin and cannot be reasonably differentiated by watershed using existing data. Commercial recreation activities, fishing and big game hunting and subsistence uses occur throughout the subbasin.

Rationale: Recreation was chosen as the variable for human uses because it changes in importance from watershed to watershed.

Status: will be rated on the number of Nationally designated trails, hunting, fishing, camping, high lakes, waterways, identified OHV routes and groomed snowmobile or x-country trails within each watershed. A high rating will involve several (≥ 3) special recreation features; moderate will have one or two distinguishing recreation features; and a low rating will have no special recreation features.

Risk: the degree of conflict among users of each watershed. This includes motorized/non-motorized conflicts, wildlife/human, cattle/bison/human conflicts and impacts to aquatic and riparian habitat.

Opportunity: the possibility of reducing conflict among users of each watershed through management actions.

2. Motorized Access: Roads and trails open to motorized use provide access for a variety of human uses including cattle and bison management, timber management, mining, recreational activities such as hunting, fishing, sightseeing, pleasure driving, wildlife viewing, hiking and horseback riding. Use of roads or trails that are poorly located, inadequately maintained, or wet can create unusable routes that may produce erosion and sedimentation. Unmanaged OHV use can cause visual scars, erosion problems, and unvegetated areas that could attract weed seed.

Rationale: This variable reflects the amount of public access within each watershed relative to others in the subbasin.

Status: the availability of public access in each watershed. The average road density in the subbasin is 1.5 miles/square mile. The following road density standards derived from the ICBEMP were applied to the Medicine Lodge Subbasin:

| | |
|----------|---------------------------|
| Low | 0.1-0.7 miles/square mile |
| Moderate | 0.7-1.7 miles/square mile |
| High | 1.7-4.7 miles/square mile |

Risk: the likelihood that long-term road (or use area) closures would reduce access. As private property changes hands, road closures may be implemented in areas lacking public rights-of-ways. Risk will be rated on the percentage of public land in the watershed (high = 50%-70%, Medium = 70%-85%, Low = 85%-100%).

Opportunity: the ability to correct road and OHV problems while maintaining or improving long-term public access. A high rating would mean there is either current public access (right-of-way or easement) or a high likelihood that public access could be achieved. A low rating would mean there is little opportunity for developing long-term access.

Figures 3 and 4 show the subbasin's characterization based on status, risk and opportunity for Recreation Uses and Motorized Access, respectively. Appendix 3 contains the resource tables from which these figures were developed.

Aquatic/Riparian Characterization:

1. Riparian and Wetland Vegetation/Stream Channel Characterization:

Generally, wetland areas are saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Riparian areas are a form of wetland transition between permanently saturated wetlands and uplands. The areas exhibit vegetation or physical characteristics that reflect permanent surface or subsurface water influence. Typical riparian areas include such areas as lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers, streams, glacial potholes, and shores of lakes and reservoirs with stable water levels. Riparian-wetland areas do not include ephemeral streams and playas that do not exhibit the presence of vegetation dependent upon free water in the soil. Ephemeral streams and playas are situated permanently above the water table and flow or fill only during or immediately after a rainstorm or snowmelt.

Healthy riparian-wetland areas provide values and benefits far in excess of the small percentage of the landscape they involve. Riparian-wetland areas, when healthy and functioning have the following values:

1. Contribute to improved water quality and removal of sediment as water filters through the robust, native vegetation.
2. Rebuild floodplains and reduce erosion of streambanks, hold water in streambanks and release water slowly, increasing the amount of water effectively available for irrigation, mainstream biota, and ground water reserves.
3. Provide improved spawning and rearing habitat, aquatic life for food, overhanging bank and woody debris shelter for fish populations.
4. Provide food cover, nesting sites, and migratory routes during critical periods of birds' life cycle.
5. Provide forage, shade, shelter, and water for livestock and a wide array of game and non-game wildlife species.
6. Provide recreationists with shade, scenery, water, and areas for fishing, picnicking, and camping.
7. Contain important archeological and cultural resources.
8. Allow for environmental education and scientific research on the most productive, sensitive, diverse, and often geographically limited ecosystems.

Riparian-wetland areas have declined strongly from historical conditions to the current situation based on, "An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins, Volume III" (Quigley, Arbelbide, et al 1997). There has also been a decline in shrublands in the riparian zones in the Medicine Lodge Subbasin. Generally, through disturbance or natural succession, riparian-wetland shrublands have shifted to forests or herblands. In the Medicine Lodge Subbasin, wildfire suppression has resulted in the encroachment of coniferous forests in some riparian-wetland areas. The primary decline in riparian-wetland areas is due to human induced disturbance. The Interior Columbia Basin-wide findings documented the following impacts that led to this decline in riparian/wetland zone: beaver eradication, farming, irrigation diversions, livestock grazing, roads, timber harvesting, mining, recreation and noxious weed invasion.

The first major human disturbance to riparian-wetland areas was the virtual eradication of beavers by fur trappers. During the early 1800's, beaver pelts for hats and garments brought many trappers to the area. Beaver populations during this period were nearly eliminated by the fur trade, and the subsequent quantity and quality of riparian habitat declined. Beavers play a key role in maintaining and enhancing riparian and aquatic ecosystems for multiple uses, primarily through dam construction (Olsen, 1994).

European settlement of the Medicine Lodge area in the late 1800's, introduced farming and livestock grazing practices which further impacted riparian-wetland areas. The impacts of farming of floodplains and valley bottoms include the loss of native vegetation, bank instability, loss of floodplain function, increased sediment supply, changes in the stream channel, and water diversion for irrigation. Beginning in 1883 numerous large ranches were established along Medicine Lodge Creek. Residents filed for the first water rights and began constructing irrigation diversions from the creek and its tributaries. Irrigation diversions have de-watered some lower stream reaches and

springs within the subbasin. Streamside roads, timber harvest, mining activities, recreational activities, and noxious weed invasion have influenced the health of riparian-wetland areas as well by confining channels, fragmenting native vegetation, and affecting bank integrity. Improper livestock grazing was a major contributor to riparian-wetland degradation in the Medicine Lodge Subbasin. Even before controlled livestock management, large herds of migratory sheep moved through this watershed between Nevada and Montana. Also, fairly large herds of horses belonging to private citizens, the Army and the railroad commonly were turned out to graze all winter in the lower pastures. These riparian-wetland areas are of vital importance to the livestock industry. Although riparian and wetland areas cover only about one to two percent of the summer range area of the Pacific Northwest, they can potentially produce 20 percent of the summer range forage. Livestock tend to congregate in riparian and wetland areas and utilized the vegetation much more intensively than the vegetation of adjacent uplands. Excessive use of riparian areas can affect the streamside environment by changing, reducing, or eliminating vegetation. Channel morphology can be changed by widening and shallowing of the streambed, gradual stream channel trenching, or braiding, depending on soils and substrate composition (Hansen, 1997).

Historically, the Crooked Creek, Deep Creek, and Medicine Lodge Creek drainages of the Medicine Lodge Subbasin had expansive riparian systems with complexes of beaver dams, willows, wet meadows, and some stands of cottonwoods and quaking aspen. While the headwaters and tributaries of these drainages have maintained relatively good riparian functionality, the downstream lower gradient stream reaches have been altered. Several stream reaches have been so changed by channelization, vegetative removal, de-watering, and noxious weed invasion that they are currently in a non-functional condition. Most of the streams in the subbasin are in a functioning-at-risk condition and remain susceptible to further degradation.

Best management practices have been implemented on some of the non-functioning and functioning-at-risk stream reaches which has resulted in riparian-wetland health improvement. There are more streams in need of proper stewardship to accomplish overall progress towards proper functioning condition throughout the subbasin. While pre-European settlement conditions are not recoverable in some altered streams and wetlands, degraded riparian-wetland areas can progress to proper functioning systems.

Aquatic /Riparian Issues:

1. Riparian and Wetland Vegetation/Stream Channel Issues:

Streams and riparian-wetland functionality have been altered. This affects water quality, soil erosion, availability of ground water reserves, flash flood potential, fish and wildlife habitat, especially Yellowstone cutthroat trout and other sensitive species which have the potential of being listed under the Endangered Species Act. Functionality of streams also affects livestock forage and water, recreational opportunities, archeological and cultural resources and educational opportunities. Riparian-wetland functionality is important for the health of the overall watershed, natural vegetative communities, tribal treaty interests and the long term economic stability of the Medicine Lodge area.

Aquatic/Riparian Resource Attributes:

1. Riparian and Wetland Vegetation/Stream Channel Attribute:

Riparian-Wetland/Stream Channel Functionality. This variable relates directly to Proper Functioning Condition (PFC), the stream assessment process and condition rating that is widely utilized by many private, state and federal entities. Streams and riparian-wetland areas are

functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality. Other attributes of properly functioning streams or riparian/wetland areas include the ability to filter sediment, capture bedload, and aid floodplain development; improve floodwater retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity (USDI-BLM, 1991). The functioning condition of riparian-wetland areas is a result of the interaction of geology, soil, water, and vegetation (Hansen, 1997). A system that is not functioning properly is vulnerable to further degradation by a flood event.

Rationale: The term Proper Functioning Condition (PFC) is used to describe both the assessment process, and a defined, on-the-ground condition of a riparian-wetland area. PFC has been developed in cooperation with many individuals, interest groups, and state and federal agencies. It provides the common language and communication tool that invites participation from the widest group of affected interests, both inside and outside government. For the purposes of this review, the PFC process only refers to perennial streams. Springs are not addressed unless they function as the head of a perennial stream.

Status: There are PFC rankings for the majority of streams in the Medicine Lodge Subbasin on lands administered by the Forest Service and the BLM (see Appendix 2). The PFC assessments were accomplished with a cooperative agreement with the Montana Riparian Wetland Association of the University of Montana as well as with interdisciplinary teams from the two agencies. Subsequent monitoring assessments by interdisciplinary teams have determined the health trend of riparian-wetland areas. High status areas within the subbasin primarily have proper functioning stream reaches combined with functioning-at-risk stream reaches displaying an upward trend. Medium status areas within the subbasin primarily have functioning-at-risk stream reaches displaying an upward trend. Low status areas within the subbasin primarily have non-functioning stream reaches combined with functioning-at-risk stream reaches displaying a downward trend.

Risk: The probability that some natural disturbance, such as a rain or snowmelt event, or a human-caused disturbance would degrade stream functionality below current levels or prevent their progress towards proper functioning condition. High risk areas within the subbasin primarily have non-functioning stream reaches combined with functioning-at-risk stream reaches displaying a downward trend where riparian vegetation is lacking and the stream channel is susceptible. Medium risk areas within the subbasin primarily have functioning-at-risk stream reaches displaying an upward trend. Low risk areas within the subbasin primarily have proper functioning stream reaches combined with functioning-at-risk stream reaches displaying an upward trend where either the riparian vegetation is in good health or the stream channel is stable.

Opportunity: The inherent potential that a stream system has for progressing towards proper functioning condition if land use practices allow the opportunity. High opportunity areas within the subbasin primarily have streams that have the greatest chance for progressing towards proper functioning condition. These streams generally have enough native riparian-wetland vegetation remaining to naturally regenerate, a stream channel which has not suffered major alterations, and a perennial water source. Medium opportunity areas within the subbasin have a moderate prospect of making progress towards proper functioning condition. These streams may need riparian vegetation plantings to augment remnant vegetation, have likely experienced some channel alteration which takes years of channel evolution until recovery is achieved, and have a perennial water source. Low opportunity areas within the subbasin primarily have streams that are in proper functioning condition

and do not need improvement or have streams which have been seriously impacted by land uses such as roads, farming, livestock grazing, and irrigation diversions to the point that rehabilitation is cost prohibitive.

Figure 5 shows the subbasin's characterization based on status, risk and opportunity for Riparian Vegetation and Stream Channel Functionality. Appendix 4 contains the resource table from which this figure was developed.

Aquatic/Riparian Characterization:

2. Watershed and Water Quality Characterization

Watershed

First, Interior Columbia Basin (ICB)-wide watershed findings will be described, then narrowed down to the Medicine Lodge Subbasin. In the Interior Columbia Basin Ecosystem Management Project (ICBEMP), the Medicine Lodge Subbasin was split into 2 Ecological Reporting Units (ERU's): the upper half of the subbasin was grouped in the Central Idaho Mountains ERU and the lower half fell into the Upper Snake ERU. Three findings from the ICB Assessment of Ecosystem Components show information from the Medicine Lodge Subbasin, either by itself or grouped with other subbasins:

1. On combined USFS and BLM lands, 5% of the ICB is in a vegetative pattern similar to the historical pattern, 29% was found to be in a pattern similar to reserves and 66% is in a pattern similar to commodity management.
2. A mid-scale review comparing riparian vegetation changes from aerial photographs and quadrangle maps over the last 40-60 years shows both the Central Idaho Mountains and Upper Snake ERU's now having a significant decrease in riparian shrubs (e.g. willow, birch, alder, etc.).
3. The Medicine Lodge Subbasin has a low composite ecological integrity rating, based on five individual ecological ratings: forestland, rangeland, forest and range hydrology and the aquatic system. This rating system emphasizes ecological processes and functions and has a tendency to rate human-altered systems lower than systems dominated by natural processes. For hydrologic integrity alone, the Medicine Lodge Subbasin had the greatest percentage of its area for both the range and forest cluster #6 as having low hydrologic integrity (Quigley, Arbelbide, et al, 1997).

This subbasin is a closed basin---Medicine Lodge Creek is diverted for irrigation and naturally sinks into the channel bed and the aquifer northwest of Cedar Butte. Mud Lake at the lower end of the subbasin actually receives its water from the Beaver Creek--Camas Creek Subbasin to the east, not directly receiving water from the Medicine Lodge Subbasin.

The Medicine Lodge Subbasin contains a large variety of streams: from natural, steady, thermal springs (Warm Creek and Warm Springs Creek) to high intensity runoff streams receiving snowmelt directly from the Continental Divide (Irving, Edie, Middle and Indian Creeks). The subbasin is a semi-arid steppe with many miles of ephemeral and intermittent drainages also. Many tributary drainages never confluence with Medicine Lodge Creek because of topographic barriers, irrigation withdrawals, and channel bed losses (Crooked, Warm Springs, Blue, Deep and Indian Creeks).

Based on historical accounts and personal communications, many of the tributary streams to Medicine Lodge Creek long ago had extensive beaver dam complexes and ponds that provided abundant fishery habitat (see #1. Riparian and Wetland Vegetation/Stream Channel Characterization). Today the hydrologic regime is altered with these streams experiencing downcutting and gullyng, with a lower water table stressing and reducing remnant riparian-wetland

vegetation. Beaver removal, dredging and draining of wetlands, irrigation withdrawals, improper grazing and natural, high flow events have all contributed to the present condition. This present condition of the stream channel compared to the earlier prevalence of beaver-dominated systems, is still affecting the hydrologic regime and sediment delivery.

Water Quality

Water temperature, sediment, nutrients and streamflow alteration were the most common causes of water quality impairments in the ICB (Quigley, Arbelbide, et al, 1997). U.S. EPA estimates that overall water quality impairment on BLM and FS lands in Idaho in the ICB affects approximately 10% of the total stream lengths in the basin (USDA-FS, 1996). By far the single greatest pollutant for impaired Idaho streams is sediment. Of the 10,024 stream miles with impaired water quality within the ICB in Idaho, 88% are listed due to sedimentation (USDA-FS, 1996).

Streams within the Medicine Lodge Subbasin exhibit the broad range of the water quality spectrum. There are clear spring creeks originating from thermal springs naturally high in water temperature and minerals; along with high runoff, transport streams seasonally carrying high sediment loads. Five streams within the Medicine Lodge Subbasin are specifically listed on the State's 303(d) List of Water Quality-Limited Streams: Edie, Fritz, Irving, Medicine Lodge and Warm Springs Creeks. These streams are shown on Figure 1. The pollutants listed for these streams are combinations of nutrients, sediment and temperature. While some spring creeks are thermally influenced, some of the longer tributaries to Medicine Lodge Creek have very cold water temperatures. All of the streamflow pollutants in this subbasin originate as nonpoint sources—there are no industrial/municipal point sources of discharge.

Aquatic/Riparian Issues:

2. Watershed and Water Quality Issue:

Degraded stream channels and streambanks along some streams have in the past, and continue to, impair water quality. The extensive change in stream riparian/wetlands from beaver-dominated systems to degraded stream channels and banks, accompanied by more intensive land management activities, have lowered water tables, stressing and limiting riparian/wetland vegetation and has increased sediment delivery and water quality pollutants primarily through streambank erosion.

Aquatic/Riparian Resource Attributes:

2. Watershed and Water Quality Attribute:

Water Quality: This attribute will identify streams and watersheds that appear to support or not support the beneficial uses of cold water biota and salmonid spawning.

Rationale: This attribute defines which streams appear to support and not support their beneficial uses. Beneficial use determination is the defining term for whether the stream is an impaired stream, and whether it will continue to appear on the State's 303(d) list of water quality-limited streams. USFS, BLM, Idaho DEQ and Idaho Soil Conservation Commission (ISCC) existing information will be used to define these categories.

Status: The current condition of the stream and watershed ranked according to whether it appears to support its beneficial uses. The streams and watersheds that appear to fully support their beneficial uses will be ranked as high. The streams and watersheds that need verification or only partially

support beneficial uses will be ranked medium. Streams and watersheds that appear to not support their beneficial uses will be ranked low. The following information will be used by the agency hydrologists to compile and professionally ascertain whether the stream beneficial uses appear to be fully supported, partially supported or not supported: stream PFC inventory, rating and trend; existing streambank and channel stability; water quality; fish habitat surveys; water temperature and site characteristics. Professional judgement will be used to rank these watersheds based on this body of information.

Risk: The likelihood that natural events or continued, existing land uses will prevent the streams and watersheds from attaining their beneficial uses. A high risk is one where the streams and watersheds do not currently support their beneficial use and where other streams have a high likelihood in the future of not attaining their beneficial uses. A medium risk is a stream or watershed that supports its beneficial uses but has degraded conditions and poses a moderate risk of not meeting its beneficial uses, and a low risk are streams and watersheds likely to continue to support their beneficial uses. Stream/watershed characteristics that affect risk are: inherent soil, streambank and channel stability, watershed cover and condition, streambank cover and condition and adjacent road condition and impacts.

Opportunity: This describes the relative potential for streams and watersheds to support beneficial uses where they are currently not being met. High opportunity streams and watersheds have a high potential to improve and support beneficial uses. A medium opportunity stream or watershed has a moderate potential for improvement. Low opportunity streams and watersheds are those that either meet their beneficial uses and have a low potential for improvement, and those that, due to the severity of their condition, and the time needed for possibly meeting their beneficial uses, have a low potential to improve. Opportunity factors considered are: inherent soil characteristics; streambank and watershed stability, cover and condition; foreseeable management actions; road conditions and constraints; and recovery timeframes.

Figure 6 shows the subbasin's characterization based on status, risk and opportunity for Water Quality. Appendix 4 contains the resource table from which this figure was developed.

Aquatic/Riparian Characterization:

3. Fisheries Characterization:

The Interior Columbia Basin Assessment outlined four major basin-wide issues potentially impacting the fisheries and aquatic integrity throughout the basin. They included: 1) catastrophic wildfire and active forest restoration; 2) the impact of federal land management on anadromous and inland fisheries habitat integrity; 3) effects of road density; and 4) the delineation and conservation of fishery stronghold watersheds (Quigley, Arbelbide, et al, 1997).

Catastrophic wildfire and road density do not appear to be major issues within the Medicine Lodge Subbasin with respect to aquatic habitat integrity. Restoring aquatic habitat integrity and conserving Yellowstone cutthroat trout strongholds by reducing impacts from federal land management activities is an extremely important issue as the BLM and Targhee National Forest manage 63% of the Medicine Lodge Subbasin. Also of importance in the Medicine Lodge Subbasin is the extent and rate of introgression (competitive displacement) of the native Yellowstone Cutthroat trout by the exotic rainbow and brook trout introduced into the subbasin. Although this issue was discussed in the ICB assessment, it was not brought forward as a major issue within the Interior Columbia Basin. However, within the Medicine Lodge Subbasin, as well as most of the Upper Snake River Basin, the displacement of native fish species by introduced exotic species is a critical issue.

The Medicine Lodge Subbasin is one of the four “sink drainages” in Eastern Idaho which include the Big Lost River, Little Lost River, Birch Creek and Medicine Lodge Creek. The “sink drainages” are a series of streams which flow in a southerly direction from the high mountains in south central and southeastern Idaho, across high desert valleys and then sink into the alluvial deposits, ultimately into the lava beds of the Snake Plain Aquifer. Consequently, they are not directly tributary to the Upper Snake River.

The Medicine Lodge Subbasin supports a moderately diverse community of game and non-game fish species which includes: Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*), rainbow trout (*Oncorhynchus mykiss*), brook trout (*Salvelinus fontinalis*) and the shorthead sculpin (*Cottus confusus*). Rainbow trout X Cutthroat trout hybrids are also present. Rainbow trout is the most common fish species and is found in most streams in the subbasin. Yellowstone cutthroat trout are also widely distributed, but the densities are typically low, suggesting they are remnant populations. The Yellowstone cutthroat trout is a State sensitive species and was petitioned for listing as threatened under the Endangered Species Act in 1998. Yellowstone cutthroat trout populations appear to be diminishing over the last two decades to some degree due to habitat loss but primarily due to competition from rainbow and brook trout. Rainbow trout are also known to hybridize with the cutthroat further depleting their numbers. Healthy Yellowstone cutthroat trout communities only occur in remnant headwater populations. But there is evidence to indicate that these populations are also slowly being introgressed (hybridized) by rainbow trout and/or being displaced by the high reproductive potential of brook trout. Self sustaining populations of Yellowstone cutthroat trout are found in Crooked Creek, Webber Creek, Fritz Creek, Divide Creek, Horse Creek, Irving Creek, Middle Creek, Indian Creek and the upper main stem of Medicine Lodge Creek. Brook trout are also widely distributed and are found in Webber Creek, Divide Creek, Irving Creek, Edie Creek and Cold Creek. Brook trout populations appear to be expanding throughout suitable habitat within the subbasin. Shorthead sculpin are distributed throughout the subbasin and appear to be relatively abundant.

The debate as to what species are indigenous to the Medicine Lodge Creek Subbasin (i.e. Yellowstone cutthroat trout) is still on-going and may never be resolved as hatchery introductions since the early 1900's have included rainbow trout, Yellowstone cutthroat trout and brook trout. Hatchery stocking was eliminated in the late 1980's and the subbasin is currently managed as a wild trout fishery. The Interior Columbia Basin Ecosystem Management Project (Quigley, Arbelbide, et al, 1997) suggests that there were no indigenous salmonids in the Medicine Lodge Subbasin. However, a U. S. Geological Survey Report (Hayden, 1872) indicated that trout were abundant in Medicine Lodge Creek. It is not clear if these trout were Yellowstone cutthroat or West slope cutthroat as some have theorized. Currently there is no known evidence of West slope cutthroat trout in the subbasin. For management purposes, the endemic salmonid of the Medicine Lodge Subbasin is considered to be the Yellowstone cutthroat trout even though it may or may not be indigenous.

In general, tributary connectivity throughout the Medicine Lodge Subbasin is good. The two main exceptions are Indian Creek and Edie Creek which are both dewatered or partially dewatered during the irrigation season. Historically, land use activities have degraded the quantity and quality of salmonid habitat throughout the subbasin. In a few stream reaches (Lower Middle Creek; Lower, East Fork and West Fork of Irving Creek; and parts of Edie and Indian Creek), past land management activities have caused severely degraded, deeply incised (gullied), non-functional conditions which greatly reduce the quantity and quality of fishery habitat in these reaches. However, current land use management is producing upward trends in riparian and channel conditions and subsequently upward trends in the quantity and quality of salmonid habitat. Channel manipulation throughout the subbasin has been relatively minor but has reduced the quality and quantity of salmonid habitat to some extent. In general, water quality and water temperature within the subbasin are meeting standards for cold

water biota and for all salmonid life stages. The main exception is excessive sedimentation which is degrading the habitat in Irving Creek, Edie Creek, and the lower reaches of Medicine Lodge Creek. Overall, the quantity and quality of salmonid habitat on BLM and National Forest within the Medicine Lodge Subbasin is good to fair. Habitat values on private ground also appear to be fair to good (Traher, 2001). The Aquatic Biotic Index (Quigley, Arbelbide, et al, 1997) for the Medicine Lodge Subbasin was rated as low primarily due to the lack of endemic salmonid species.

Aquatic/Riparian Issues:

3. Fisheries Issues:

1. The composition, distribution, density and status of fish populations in the subbasin have changed significantly over the 20th century. This is due in part to dramatic changes in entire riparian and wetland community types as the result of land use activities in the subbasin. Aquatic habitat degradation appears to be a direct result of the general transition from “wet” community types to the more drier facultative wetland and upland community types. This transition has resulted in reduced channel stability and subsequent channel incisement. This reduced channel stability has in turn caused aquatic/fishery habitat degradation resulting in changes in fish population dynamics.

2. Special status species. The Yellowstone cutthroat trout was petitioned for listing as threatened under the Endangered Species Act in 1998. Interbreeding and competition with introduced species (i.e. rainbow trout and brook trout) is clearly a key factor in the decline and current status of Yellowstone cutthroat trout within the Medicine Lodge Subbasin. Griffith (1988) reported that cutthroat trout are less likely to coexist with brook trout than any other non-native salmonid. Yellowstone cutthroat trout have been extirpated from most areas in Yellowstone National Park where brook trout have been introduced. Brook trout populations are expanding within the Medicine Lodge Subbasin.

Aquatic/Riparian Resource Attributes:

3. Fisheries Attributes:

1. Fishery Habitat Integrity. An aquatic system that exhibits good fish habitat integrity has good connectivity between high quality aquatic habitats within the subbasin, has good hydrologic connectivity to its active floodplain, has good water quality and quantity and a near-natural hydrograph. In short, a properly functioning riparian system which reduces stream energy and maintains a healthy sediment/discharge relationship, stabilizes the banks and channel, provides shading and canopy cover, provides woody debris and the overall channel complexity to provide a diversity of aquatic habitats and a high biodiversity of native and desired non-native fish communities. High habitat integrity will allow for the full expression of all fish life stages including resident and migratory life forms and other dispersal mechanisms, good hydrologic connectivity within the subbasin to provide for genetic diversity and the stock resilience for long term persistence and adaptation during short term natural disturbances.

Rationale. This attribute reflects the health of the aquatic habitat and natural processes within the subbasin. The measure of habitat integrity is described by the following parameters: pool frequency, pool quality, channel complexity (woody debris, boulders, undercut banks, root balls, and aquatic vegetation), road density, hydrologic connectivity to the floodplain and to the subbasin, hydrograph (timing and duration of flows), fine sediment and substrate embeddedness, bank and channel stability, canopy cover, water temperature and a proper functioning riparian zone.

The overall objective is to maintain high habitat integrity and sustainable native and desirable non-native fish populations.

Status. Each 6th order HUC was rated with respect to the above attribute. HUC's exhibiting the highest level (condition) of these characteristics were rated high for habitat integrity and those exhibiting the lowest condition were rated low. The HUC's containing only moderate conditions of these parameters were rated medium. These indicators were assessed using existing information and professional judgement. The distribution, status and health of the current fish populations (especially indigenous species) also plays a role in the overall status rating.

Risk. This factor rates the likelihood that some short term disturbance such as a 100-year flood or catastrophic fire or present management activity would degrade aquatic habitat conditions significantly below current levels for extended periods of time (i.e. is the habitat integrity sufficient for fish populations to rebound from short term disturbances to pre-disturbance levels within 1 to 2 generations?). Fish populations would be considered at high risk of extirpation if the salmonid assemblage appears to be substantially below the expected carrying capacity for the size and discharge of the stream channel or the population is showing a rapid decline; the habitat integrity trend is down and the population lacks connectivity to other subpopulations in the subbasin. Medium risk would be if the salmonid assemblage is moderately below the expected carrying capacity, the habitat integrity is static or improving, and connectivity within the subbasin is limited to 1 or 2 other subpopulations. Low risk would have the salmonid assemblage at or near the expected carrying capacity, habitat integrity is good to excellent and connectivity is high among 5 or more subpopulations.

Opportunity. This rating reflects the relative potential for improvement in habitat integrity given known land uses and conditions. A high rating would be given to those stream systems that have the most opportunity for improvement. These would be systems with a low habitat integrity rating which are over 75% controlled by federal land managers and are not constrained by some natural phenomena (i.e. thermal input, excessive bed loss etc.) or land use activities outside the direct control of federal land managers (i.e. private water diversions that dewater stream segments). A medium rating would be assigned to those systems with moderate opportunities for improvement. These are systems with low to moderate habitat integrity ratings, are between 25%-75% controlled by federal land managers and are not significantly constrained by natural conditions or land use activities outside the control of federal land managers. And finally, a low opportunity rating is given to stream systems which are less than 25% controlled by federal land managers, habitat integrity is poor and/or there are serious natural and man made constraints outside the control of federal managers. The low opportunity rating could also apply to stream systems with very high habitat integrity ratings which are at or near carrying capacity and do not have much room for improvement.

2. Competition with Exotic Species. Rainbow trout are currently distributed throughout most of the Medicine Lodge Subbasin and are the most abundant species present. Every drainage in the subbasin where Yellowstone cutthroat trout currently exist show some degree of hybridization with rainbow trout. However, there are some headwater, remnant populations which appear to be relatively pure. These appear to be areas of some of the best remaining habitat, water quality and the coldest water temperatures. Brook trout in the early 1980's were considered to be locally abundant, isolated populations (IDFG, 1989). Currently, they have expanded into most drainages within the subbasin where connectivity with Medicine Lodge Creek is good. Brook trout become sexually mature at age 1 or 2 while the Yellowstone cutthroat generally do not become sexually mature until age 3 or 4. Where the two species overlap, and the conditions are favorable for brook trout, the brook trout simply out-reproduce the cutthroat trout giving them the competitive edge by sure numbers in a

limited amount of available salmonid habitat. Over time, where these two species overlap, the brook trout will win out.

Rationale. This attribute reflects the current distribution and status of exotic species and the amount of rainbow and brook trout overlap with Yellowstone cutthroat trout and professional judgment as to the rate of expansion of exotic fish species into remnant Yellowstone cutthroat trout habitat.

Status. Each 6th order HUC was rated with respect to the current distribution and status of exotic species and the current amount of species overlap. HUCs exhibiting the lowest level of these exotic species competition characteristics were rated high while those with extensive competition characteristics were rated low. A moderate level of exotic species competition was rated medium.

Risk. This factor reflects the likelihood that either brook trout or rainbow trout will totally overwhelm the Yellowstone cutthroat trout populations and cause their extirpation from the Medicine Lodge Subbasin. There is a high risk rating if Yellowstone Cutthroat trout, rainbow trout and brook trout populations are totally overlapping, Yellowstone cutthroat trout comprise less than 50% of the species composition and/or the number of adult cutthroat in the subpopulation is less than 50 individuals. The risk is moderate if brook trout are absent from the drainage and rainbow trout are less than 25% of the species composition or there is a small, relatively pure population in high quality habitat in the headwaters and/or the number of adult cutthroat in the subpopulation ranges from 50-500 individuals. There would be a low risk of negative competitive interactions if there are currently no exotic species in the drainage, or there are no brook trout and the rainbow trout only comprise 10% or less of the species composition and/or the number of adult cutthroat in the subpopulation is greater than 500 individuals.

Opportunity. This is a rating of the relative potential of maintaining or improving the distribution, status and health of the Yellowstone cutthroat trout populations in the Medicine Lodge Subbasin. A high rating would be assigned to those systems that currently have healthy Yellowstone cutthroat trout populations, exotics are absent or brook trout are absent and rainbow trout comprise less than 10% of the species composition and have a habitat integrity rating of medium with a static or declining trend. A medium rating would be given where Yellowstone cutthroat populations are depressed and brook trout are absent and rainbow trout comprise less than 25% of the species composition and the habitat integrity rating is moderate with a static or upward trend. And finally, a low opportunity rating would be assigned if there is currently total overlap of brook trout and rainbow trout with Yellowstone Cutthroat trout populations and the exotic species comprise over 50% of the species composition. A low opportunity rating would also be given to the unlikely scenario of a healthy, relatively pure Yellowstone cutthroat population in a system with high habitat integrity (i.e. there is not a lot of room for improvement).

Figures 7 and 8 show the subbasin's characterization based on status, risk and opportunity for Fishery Habitat Integrity and Special Status Species–Yellowstone Cutthroat Trout, respectively. Appendix 5 contains the resource tables from which these figures were developed.

Terrestrial Wildlife Characterization:

A review of the Interior Columbia River Basin Ecosystem Management Project wildlife issues found that some of these are applicable to the Medicine Lodge Subbasin (Quigley, Arbelbide, et al, 1997). They are related to structural changes to vegetation, the spread of noxious weeds, and a loss of habitat

connectivity. The following characterization gives a broad overview of this subbasin's wildlife, examines ICBEMP issues, and identifies additional locally identified subbasin issues.

Wildlife habitat is composed principally of high quality native ranges. Wildlife species diversity is high as a result of the diversity of the habitat and the abundance of water. Mule deer (*Odocoileus hemionus*) and white-tailed deer (*O. virginianus*) are both present in the Medicine Lodge subbasin. The mule deer herd is one of five population centers in the Idaho Falls Field Office area of responsibility. The white-tailed deer have been increasing in the subbasin but the herd is relatively small compared to the herd along the Snake River and appears to be limited in its range to the areas along Medicine Lodge Creek. Moose (*Alces alces*) use of public lands varies significantly with season and condition of the habitat. Summer and winter ranges on the BLM lands in the Medicine Lodge Subbasin are in poor condition due to historical and continued livestock grazing. Rocky Mountain elk (*Elaphus canadensis*) can be found throughout the drainage but primarily in the winter on the upland benches. Pronghorn antelope (*Antilocapra americana*) are present in the subbasin but the population is small in comparison to the ones on the Big Desert and in the other mountain drainages. There is some antelope fawning that occurs in the area and the animals move out of the drainage in the winter to the area around Small, ID.

Upland game birds are present in the subbasin. The species are: Sage grouse (*Centrocercus urophasianus*), blue grouse (*Dendragapus obscurus*), ruffed grouse (*Bonasa umbellus*), and Hungarian partridge (*Perdix perdix*). Sage grouse habitats have been identified as the areas along Medicine Lodge Creek. The grouse nest in the lower reaches of the drainages and then migrate upstream with the chicks. Some of them eventually summer at the higher elevations and some go over the mountains into Montana. These birds come back in the late fall and early winter and then winter on the grounds south and east of the subbasin. The subbasin provides important brood rearing and migration habitat for the grouse especially in the riparian areas adjacent to Medicine Lodge Creek. Some areas have sagebrush densities that are very high, decreasing their usability to sage grouse. Prescribed fires have opened these dense stands so that they are more usable to grouse for brood rearing as the number of forbs have increased in these areas.

Rocky Mountain bighorn sheep (*Ovis canadensis*) and mountain goats (*Oreamnos americanus*) have been observed within the subbasin. These sightings are rare on BLM lands and the BLM lands are not considered to be prime habitat for either of these species. They are found in the upper reaches of the drainages on Forest Service lands.

Canada lynx (*Lynx canadensis*) may also use the upper reaches of the drainages for travel corridors but suitable habitat (moist coniferous forest with adequate understory) is lacking on the BLM lands in large enough blocks to support lynx.

Gray wolves (*Canis lupus*) have been reintroduced in the Central Idaho ecosystem and this area may provide some habitat for the wolves as they follow the big game herds during the migration. The population is considered to be Experimental/Non-essential by the U.S. Fish and Wildlife Service. The Continental Divide is considered a major travel corridor for the dispersal and movement of wolves (and other forest carnivores) between the Yellowstone ecosystem and the Central Idaho ecosystem.

The other forest carnivore that may have a presence in the upper reaches of the drainage is the wolverine (*Gulo gulo*). Habitat is present within the subbasin but increasing levels of disturbance in some localized areas may be reducing habitat quality for this species.

Several migration or travel corridors exist throughout the subbasin. Nearly all riparian and stream systems are travel corridors for a variety of wildlife species. Medicine Lodge Creek is the major travel corridor but it is primarily on private lands.

Bald eagles (*Haliaeetus leucocephalus*) and peregrine falcons (*Falco peregrinus*) are found in and around Camas National Wildlife Refuge (NWR) and Mud Lake Wildlife Management Area (WMA). The eagles are primarily winter residents and the falcons are there in the spring, summer, and fall. There is a peregrine hawk tower at Camas NWR where falcon chicks have been placed and where adults have returned to nest.

Other species of concern include: Burrowing owl (*Speotyto cunicularia*), great gray owl (*Strix nebulosa*), merlin (*Falco columbarius*), northern goshawk (*Accipiter gentilis*), and ferruginous hawk (*Bufo regalis*).

Waterfowl species are common around Camas NWR and the WMA. There is also some use of the perennial streams (i.e., Medicine Lodge Creek and Indian Creek). Sandhill cranes (*Grus canadensis*) are common along perennial streams and in some upland sites adjacent to riparian zones.

Terrestrial Wildlife Issues:

- 1. Core wildlife habitat, including forest, range and riparian components, at least one half mile or more away from motorized access routes or developments is needed for wildlife species in this watershed.**
- 2. Open road and trail use by recreationists, including relative cross country snowmobile use levels, especially during critical seasons will affect wildlife species.**
- 3. Special status wildlife species do exist in this watershed.**

Terrestrial Wildlife Attributes:

1. Wildlife Connectivity/Core Habitat

This attribute is a combination of three core habitat components: forests, rangeland and riparian. The assumption is that the larger and less degraded a block of habitat the greater the available food, water, and shelter relative to each other. For wildlife, this would mean there is more opportunity for adequate to optimum habitat resources at appropriate seasons as well as less travel involved to get to the necessary food and water for survival without incurring significant stress or risk that impacts their ability to find a mate, raise young, or survive. The quality of the forest component is determined by the acreage of forested habitat and condition and degree of fragmentation of the stand. As an example, much of the west has a disproportionate aspen/conifer ratio. The rangeland component is the acreage of habitat blocks and condition and degree of fragmentation of shrub-steppe vegetation, greater than one-half mile from urban or agricultural development such as irrigated fields, houses, dogs (increased predation or disturbance) etc. The riparian components are the number of miles of streams in properly functioning condition (PFC) as compared to total stream miles in each watershed that have not experienced heavy conifer invasion.

Rationale: The relative size of the forest, rangeland and riparian habitat components within each watershed will be measured. Species using forested habitat include wolves, lynx, forest accipiters, marten, wolverine, elk and deer. Species of concern that utilize riparian areas include bat species, lynx, various songbirds, furbearers, and wild ungulates. Although this does not measure connectivity directly,

the absence of core habitat is an indicator of a lack of connectivity that will be evident within individual watersheds. It also does not indicate if lack of connectivity is natural or management caused.

Core habitat ratings for forests and range were assigned by first determining the largest core or unfragmented area of forest or sagebrush within each watershed. The percentage of the watershed was calculated and then divided by three to obtain a range of values. Riparian values are a reflection of the amount of proper functioning streams within each watershed. Non-functioning condition received a low rating, functional at risk a moderate rating, and proper functioning condition a high rating. The final step combined all three ratings for a composite rating for each watershed. During the formulation for the composite rating more weight was given to the riparian rating because this habitat component was used by other species that also live predominantly in rangeland or forested environments and because it is contained within all habitats.

Status: describes the relative size of blocks of habitat within the subbasin and their connectivity and measure of disturbance, defined as conifer invasion and the presence of nonnative grasses. Assigns a high, medium, or low rating to each watershed. Watersheds that contain large blocks of forest, sagebrush, and riparian systems will rate high and those that have small blocks of habitat in all three categories will rate low. The rest will rate moderate.

Risk: the likelihood that some type of disturbance would degrade this site from its current condition. Assesses a high, medium, or low rating to each watershed. In forested areas disturbances would be potential for new roads, overharvest, or lack of adequate representation of appropriate seral stages. In rangeland a disturbance could be increased grazing pressure, urban or agricultural development or nonnative grass seedings. In riparian areas a disturbance is principally livestock grazing. A high rating would be given to watersheds that have potential for multiple disturbances and a low would be a watershed that have no or very little potential for new disturbances. All others would be moderate.

Opportunity: relative potential of blocks of habitat to respond favorably to actions that would restore/conservate core habitat features.

2. Wildlife Disturbance

Rationale: Open road/trail density and relative cross country snowmobile use levels will be used as a measure of probability of disturbance to wildlife species. Increased road densities can also indicate a greater likelihood of noxious weed invasion and associated likelihood of wildlife habitat degradation.

Cross country snowmobile use greatly increases the number of mid-size carnivores and other animals affected by snowmobilers. It also degrades habitat for burrowing animals. Disturbance by snowmobilers on big game winter ranges and while antler collecting can also be a problem. Predicted use by recreationists when coupled with presence of sensitive species habitat (winter range, lynx, sage grouse leks) will indicate a greater likelihood to affect a species by both physical disturbance and spread of noxious weeds in their habitats. Predicted use is based on observed trends in recreation use and presence of features that attract recreationists (big game antlers presence, lakes, trails, and fishable streams, campgrounds, road access, gentle topography, near population center, etc).

Status: describes the level of disturbance within a watershed relative to other watersheds within the subbasin. Assigns a High, Medium, or Low rating to each watershed. Watersheds with less than 0.7 miles of road/square mile will get a low rating and watersheds with greater than 1.7 miles/square mile would rate high. For snowmobile use, a high rating means virtually all of the area is covered by tracks and the snow is packed. Medium is travel ways are packed in non-forested openings, but wooded cover is relatively free of trails. Low ratings mean single or double tracks are regularly visible on the landscape.

Risk: the likelihood that some type of disturbance would degrade the site from its current condition. In this case the probability that recreational use or motorized access routes will increase.

Opportunity: relative potential of a watershed to respond favorably to actions to reduce disturbance to sensitive species. This could mean as a possibility in the future, ORV education or travel restrictions could have an impact. Opportunity for better control rated high if the topography naturally restricted access or travel (steep inaccessible terrain) or had potential for better travel management. It rated low if the terrain was flat to gentle in topography and therefore difficult to manage travel access or cross-country travel.

2.Special Status Terrestrial Species Habitats

Rationale: The Endangered Species Act (ESA) mandates a more intensive management style among the federal land management agencies to protect listed species. Almost by definition, where these special status species exist, their accompanying habitats become more important and special considerations are placed on the management of these habitats.

Status: the final attribute selected is the presence of special status species habitats within the subbasin. Although a variety of wildlife species utilize nearly all watersheds within the subbasin, several stand out as extremely important to wildlife as wintering, breeding or migrational areas. A high status rating was assigned to those watersheds that are utilized by many species during many seasons and have a representation of important vegetation types in proportion to historical ranges of variability. Moderate status ratings were assigned to those watersheds that provided season-long use by a single species or multi-species use during a single season. A low status rating was assigned to those that received light or predominantly single-season use by a single species. Presence of a known threatened or endangered species could cause a watershed to have a high status rating.

Risk: the fact that species have been listed as threatened, endangered, candidate or sensitive would indicate that those species are at risk throughout their range. These habitats are generally small, scattered, specific to the species, and could occur in all of the watersheds. Therefore all of the watersheds with known presence of these species would have a high rating.

Opportunity: due to the nature of the species habitats identified above there is little opportunity to improve the habitats other than through the protection of the ecosystem as a whole. Where opportunities to improve the ecosystem have been identified by other programs such as Range Management or Fire, there would be a corresponding rating for the improvement of these habitats; but as of yet these opportunities have not been identified.

Figures 9, 10 and 11 show the subbasin's characterization based on status, risk and opportunity for Wildlife Disturbance, Wildlife Connectivity/Core Habitat and Special Status Terrestrial Species

Habitats, respectively. Appendix 6 contains the resource tables from which these figures were developed.

Soil Characterization:

The ICBEMP, which focuses primarily on rangeland health, lists soil loss through water and wind erosion as the primary concern for the Upper Snake ERU (Quigley, Arbelbide, et al, 1997). Salty soils, alkaline and clayey soils are not a problem in this particular subbasin. Macrobiotic surface crusts are present but not a lot is known about the surface management relationships with these crusts.

Soils in the Medicine Lodge Subbasin are shallow to deep residual mountain soils of mixed geology at the high elevations and deep floodplain alluvium soils with aeolian and loess influence as identified in Natural Resource Conservation Service (NRCS) soil surveys. The geology parent materials are mainly from rhyolite and basalt formations and some mountain quartzite and limestone .

Soil mapping units with hydric soils and/or hydric soils inclusions are identified within this subbasin by the NRCS. Fragile or highly potential erosive soils are also identified on canyon walls and rough terrain.

In this subbasin, soil water erosion is primarily associated with steep slopes and rough terrain. Wind erosion is associated with sand deposits on the ancient Lake Terretion playa bed and the Eastern Idaho loess deposits. Generally the erosion rate is estimated to be within the BLM management goal of less than five tons per acre, except for areas of steep slopes, concentrated livestock grazing areas, recent burns, livestock trails and road and gully erosion.

For Forest Service lands, no more than 15% of an activity area may have detrimentally impacted soil to meet the goal of maintaining or improving long term soil productivity and soil hydrologic function. Detrimental impacts include displacement, compaction, puddling or severe burning. Long term soil productivity is also sustained by retaining fine organic matter and woody residue on activity areas.

Soil compaction by livestock, especially around watering areas, trails and roads is a problem along with vehicular traffic. Soil compaction by heavy objects can penetrate and compact soil material to depths of 15 to 20 inches. This is especially true for traffic on moist soils. The surface 4 to 6 inches is usually released from compaction by frost action. The deeper soil compaction remains in the soil for years and can increase over time. Soil compaction restricts root growth, reduces soil productivity and contributes to water runoff and soil erosion.

Soil Issues:

Soils Issues for the Medicine Lodge Subbasin are as follows:

- 1. Mass wasting is a potential on certain soils within the Irving Creek watershed.**
- 2. Reducing water erosion on soils to less than 5 tons/acre/year, especially on burned areas and the steep slopes of the subbasin's drainage areas.**
- 3. Reducing wind erosion on soils to less than 5 tons/acre/year on the southern sandy soil near Mud Lake.**
- 4. Soil compaction on roads, livestock trails, especially when soils are moist.**

Soil Resource Attribute:

Soil erosion from water and wind erosion and soil transport and loss from mass wasting.

Rationale: BLM's Land Use Plans specify a soil erosion loss rate of no more than 5 tons/acre/year. Land management actions can accelerate natural erosion rates and BMP's are used to maintain our goal. Soil surveys, actual field measurements and professional judgement will be used to rate each watershed.

Status: The current condition of the soil resource. A high condition denotes high soil loss through wind, water and mass wasting. A moderate condition is soil that has a medium level of soil erosion and a low condition is low soil erosion and loss.

Risk: This is the relative risk of accelerated soil erosion loss. High risk watersheds exhibit naturally high soil erosion characteristics or have a high likelihood for erosion due to management actions. Medium risk watersheds have a moderate likelihood of natural and accelerated erosion loss, and low risk watersheds have soils with low natural soil erosion characteristics or the likelihood of accelerated erosion in the future is low.

Opportunity: This is the relative potential of maintaining or improving the current soil condition to reduce soil erosion and loss. A high opportunity means the potential is high to prevent future erosion; a medium opportunity has a moderate potential to maintain or achieve good condition; and a low opportunity means that either the soils cannot easily achieve good condition or that the current condition is good and the potential for continued, future improvement is low.

Figure 12 shows the subbasin's characterization based on status, risk and opportunity for Soil Erosion (from water and wind erosion), and Loss (from mass wasting). Appendix 7 contains the resource table from which this figure was developed.

Rangelands/Weeds Characterization:

Based on *An Assessment of Ecosystem components in the Interior Colombia Basin and Portions of the Klamath and Great Basins, Volume III* upland areas across the basin have seen substantial changes in the fire regime, and invasion and spread of exotic plants from the historical conditions to the current situation. A decline of approximately 42% of the Mountain Big Sage (*Artemisia tridentata vaseyana*) cover type has occurred, due to an increase in exotic forbs and the conversion to agricultural cover types (Quigley, Arbelbide, et al 1997). Drought years in the Upper Snake ERU have been documented to occur less frequently (only 15% of the time for 1895-1994). As a consequence, the potential for restoration activities in the Upper Snake ERU is higher. The Medicine Lodge Subbasin has experienced trends consistent with these ICBEMP findings. Over the last 100 years, the invasion and spread of exotic plants has been noteworthy. Leafy spurge and knapweed have spread across all ownerships within this subbasin.

The rangelands in the Medicine Lodge and the small portion of the Beaver-Camas Subbasin are in relatively in good condition. Weed species are present throughout the subbasin, but for the most part do not occupy large acreages. Medicine Lodge Canyon and Deep Creek watersheds do have large infestations of weed acreages. The main noxious weed species present in the subbasin are: leafy spurge (*Euphorbia esula*), spotted knapweed (*Centaurea maculosa*), diffuse knapweed (*Centaurea diffusa*), russian knapweed (*Acroptilon repens*), canada thistle (*Cirsium arvensis*), scotch thistle (*Onopordum acanthium*), and black henbane (*Hyoscyamus niger*).

Vegetation in this subbasin has an overall sagebrush (*Artemisia spp.*) dominance in both visual aspect and percent ground cover. The particular species of sagebrush is dependent upon on-site soils, with low sagebrush (*A. arbuscula*) being found on shallow and rockier soils, and big sagebrush (*A. tridentata* subspecies) being found on deeper and more productive soils. Where conifers are the dominant aspect, Douglas fir (*Pseudotsuga menziesii*) is the most common species.

The following upland plant species are some of the more commonly occurring species: four-wing saltbush (*Atriplex canescens*); winterfat (*Ceratoides lanata*); bitterbrush (*Purshia tridentata*); crested wheatgrass (*Agropyron cristatum*); western wheatgrass (*Pascopyrum smithii*); bluebunch wheatgrass (*Pseudoroegneria spicata*); orchard grass (*Dactylis glomerata*); Idaho fescue (*Festuca idahoensis*); junegrass (*Koeleria cristata*); Indian ricegrass (*Oryzopsis hymenoides*); Nevada bluegrass (*Poa nevadensis*); Kentucky bluegrass (*Poa pratensis*); Sandberg bluegrass (*Poa secunda*); squirreltail (*Sitanion hystrix*); Columbia needlegrass (*Stipa columbiana*); and needle-and-thread grass (*Stipa comata*). Many annual and perennial forbs, too numerous to mention, would also receive grazing pressure.

Although present to some degree in the subbasin, cheatgrass (*Bromus tectorum*) is not considered to be a concern for spread due to total yearly precipitation (over 12 inches). This factor does not permit annual vegetation to overtake and dominate a site.

Direct impacts to vegetation result from herbage removal by foraging animals. In addition to plant consumption, trampling can also be a factor. If the amount of grazing use (utilization) is high for a given year, or especially for a sequence of years, the composition of the vegetative community may become modified as the more desirable and more utilized species lose vigor and decrease in density throughout the site. This concern is heightened during years of drought as plants are stressed even before grazing occurs. Grazing also has the effect of stimulating plants, resulting in increased plant production if energy reserves are adequate.

No plant species listed under the Endangered Species Act occur in the Medicine Lodge and Beaver Camas Subbasin. The following state and BLM sensitive plant species are found within the watershed: Two groove milkvetch (*Astragalus bisulcatus*), Drummond's milkvetch (*Astragalus drummondii*), blue grama (*Bouteloua gracilis*), Idaho sedge (*Carex parryana* ssp. *idaho*), Centennial rabbitbrush (*Chrysothamnus parryi* ssp. *montanus*), sepal-tooth dodder (*Cuscuta denticulata*), Yellowstone draba (*Draba incerta*), Giant helleborine (*Epipactis gigantea*), Green needlegrass and (*Stipa viridula*).

Rangelands/Weeds Issues:

Rangelands within the Medicine Lodge/Beaver-Camas Subbasin are relatively similar to the potential natural communities. However, some areas are in a lower ecological condition due to historical grazing. Rangelands/weeds issues for the Medicine Lodge Subbasin are:

- 1. There has been a reduction in herbaceous species.**
- 2. There has been an increase in noxious weed invasion throughout the subbasin.**
- 3. There has been a loss of herbaceous understory due to decadent stands of sagebrush.**

These changes have the following associated risks:

1. Decrease in availability of rangelands for wildlife and livestock use
2. Increase in noxious weed infestations
3. Recreational opportunities could be compromised

4. Increased sediment introduced into streams due to increased runoff
5. Loss of vegetative diversity, productivity, and specific habitats

Weeds: the Medicine Lodge and Beaver-Camas Subbasin are relatively weed-free except for the Medicine Lodge and Deep Creek Watersheds. These two areas do have large areas heavily infested with weeds. All of the watersheds, however, are threatened by noxious weed invasion. The encroachment of these non-indigenous weeds threatens the health and biological diversity of the rangeland, its recreational uses, and it poses substantial economical impacts to the local communities.

1. Expansion of existing noxious weeds

Leafy Spurge: the Medicine Lodge and Deep Creek Watersheds are heavily infested. Once these plants get established they are very difficult to eradicate with herbicides.

Spotted, Diffuse, and Russian Knapweed: The Mud Lake Wildlife refuge in the Mud Lake Watershed is heavily infested with these three species and they are spreading into adjacent public and private lands.

- 2. High potential for new weed species.** Yellow star thistle, dyers woad, and rush skeleton are species that have a high potential to invade into the areas along roadways and in feed being brought into area.

- 3. Herbicides have the potential to affect human health and/or animal health and cause water contamination.**

Rangelands/Weeds Resource Attribute:

Range condition. The present state of vegetation of an ecological site in relation to the potential natural community for that site. It may also be stated in terms of specific values.

Rationale: this attribute examines current erosion, number of preferred species present (based on potential), and % of potential vegetation. It also takes into account weed species that may be invading the site. These factors give an indication of disturbance history from fire, grazing, and spraying, and can be combined into one attribute.

Status: describes the range condition within the subbasin based on on-the-ground surveys. This splits condition into three categories: excellent or good, fair, and poor. A high status means either excellent or good range condition; a medium status means fair range condition; and a low status means poor range condition.

Risk: the likelihood that some type of disturbance (natural or human induced) would degrade the site from its current range (ecological) condition. Natural disturbances could include wildfire, noxious weed invasion, overland flow events (flooding), wind erosion, and insect or disease infestation among others. Human induced disturbance could include prescribed burns, overgrazing by livestock and/or indigenous animals, mechanical treatments, and others. Assigns a high, medium, or low rating to each watershed. This rating relates to the relative stability of the site or the ability of the rangelands to improve within the subbasin to some sort of disturbance (i.e. resilience vs. susceptibility). Resilience is the ability of the rangeland vegetation to self restore given current conditions. Susceptibility is the inability of the rangeland vegetation to resist change given current conditions.

Opportunity: relative potential of range condition to respond favorably to actions that would restore ecosystem health or provide for goods/services.

Figure 13 shows the subbasin's characterization based on status, risk and opportunity for Rangeland Condition. Appendix 8 contains the resource table from which this figure was developed.

Forest Characterization:

Forests in the Medicine Lodge Subbasin show similar characteristics to those of the Upper Snake River/Snake Headwaters Ecological Reporting Units and the greater Columbia River Basin. These characteristics include a reduction of large diameter, open dry forest stand conditions; an increase in multilayered forest structure; a significant reduction in non-lethal (to the overstory) fires; an increase in stand density (number of trees/acre); and an increased risk of unnaturally large fires and/or insect/disease epidemics. Currently over 90% of forested lands, or forest islands, within the analysis area are in mature or older age classes. Young, thrifty stands of Douglas-fir and aspen are rare. Generally, natural regeneration is poor and tree growth is declining (declining mean annual increment) with an associated escalation in mortality.

Forest Vegetation Description: the forest land in the subbasin can be grouped into four distinct vegetation groups. Each group is named for its dominant tree species. The groups include: Douglas-fir, aspen/cottonwood, mountain mahogany, and limber pine.

Douglas-fir: the majority of forest land in the subbasin is dominated by Douglas-fir (*Psuedotsuga menziesii*). The age of the Douglas-fir overstory ranges from 90 to 200 years old with an average age of approximately 150 years. Increment borings from sampled stands indicate a reduction of diameter growth since European man's settlement. Understories consist of scattered patches of Douglas-fir seedlings and saplings, with some shrubs, forbs, and grasses.

Aspen/Cottonwood: quaking aspen (*Populus tremuloides*) and black cottonwood (*Populus trichocarpa*) are found throughout the subbasin where there is adequate surface or subsurface moisture. In areas having sufficient subsurface moisture or with north or east aspects, aspen is a common seral species, particularly in association with Douglas-fir. Currently, increasing numbers of Douglas-fir are present within aspen stands due to the absence of fire. Historically, cool burning fires stimulated aspen root sprouting while fire-intolerant Douglas-fir seedlings and saplings were killed. Without stand disturbances (fire, windthrow, etc), aspen are also deteriorating, often to critical threshold levels. Because fire has not been allowed to play its regenerative role in the ecosystem, aspen acreage has significantly declined since the early twentieth century.

Cottonwood is more common in creek bottoms (floodplains) and where standing water is present. Declining numbers of cottonwood indicates a lack of disturbance to stimulate root sprouting, a lack of flooding to prepare a seed bed, and/or concentrated grazing by livestock and/or big game. Cottonwood numbers have declined dramatically since settlement.

Curl-leaf Mountain Mahogany: curl-leaf mountain mahogany (*Cerocarpus ledifolius*) is present in the Medicine Lodge Subbasin, but minimal reproduction has been observed. Attempts at stimulating mahogany reproduction have had limited success, suggesting the present stands are decadent and likely seral to other communities. Current stands vary in age from 40 to 100 years old. Closed, even-aged stands of mahogany, typically seen in the Medicine Lodge Subbasin, are resistant to fire because of the lack of understory fuels. Although curl-leaf mahogany is sensitive to fire damage, it is still dependent on fire to provide suitable conditions for reproduction. Throughout the seral stages,

Douglas-fir and limber pine may be present in the stands. Mahogany has a significant role in the fertility of its growing sites since it is nitrogen fixing.

Limber Pine: limber pine (*Pinus flexilis*) communities exist on dry, rocky slopes and ridges ranging from low elevations (above juniper) to timberline. These communities are occasionally intermixed with Douglas-fir and alpine meadows. Limber pine communities may also form the forest ecotone with sagebrush steppe vegetation. Generally, limber pine are widely spaced in pure stands with understories of sagebrush and/or grass. Stands in the Divide Creek and Webber Creek Lake area, however, are densely stocked. Adequate regeneration of stands is occurring throughout the limber pine's range creating multi-aged stands. The incidence of white pine blister rust is low in the limber pine stands at this time.

Productivity: habitat types in the subbasin have low to moderate productivity due to moisture and soil limitations. The highest productivity occurs in Douglas-fir stands with northern or eastern exposures having relatively deep soils at elevations above 7000 feet. The lowest productive sites are also in Douglas-fir, usually at the sagebrush ecotone and at elevations below 7000 feet.

Disturbance: there are no known epidemic insect or disease outbreaks at this time. However, a light infestation of spruce budworm in multi-layered Douglas-fir stands is occurring in the watershed just east of Corral Creek. Forest stand conditions in the subbasin are ready for epidemic outbreaks due to reductions of vigor, more stems per acre than historical norms, and the advancing age of the Douglas-fir stands. There is also an increasing risk of a stand replacing fire because of mistletoe infections, increasing ladder fuels with multi-layered stands (especially at the ecotone between sagebrush and the forested islands), and potentially large-scale tree mortality from anticipated insect and disease outbreaks.

Although the incidence of white pine blister rust on limber pine is low, there is a potential for higher infection rates and eventual widespread mortality.

Forest Issues:

The forest environment has seen accelerated change over the last 50-80 years mostly due to the lack of fire playing its natural role. The Medicine Lodge Subbasin has the following forest resource issues:

1. Tree density (number of trees per acre) has increased.

2. Structural diversity has decreased.

3. Growth rates have decreased.

These changes have the following associated risks:

1. Larger and more severe fires which could lead to increased sedimentation to streams, an increase of noxious weeds, and a loss of forested islands.
2. An increase in the frequency, duration, and magnitude of insect and disease outbreaks.
3. A decreased availability of forest resources.
4. A simplified forest structure with the resulting decline in diversity.
5. An alteration of recreational opportunities.
6. An alteration of wildlife habitat.

Forest Attributes:

1. Stand Condition

Rationale: Tree density (number of trees per acre) is a common forestry measurement to describe a timber stand. Stand density is the corollary and used as a surrogate measurement to indicate tree and stand vigor or growth; resistance to fire, insects, and disease; and potential understory vegetation growth. Density measures correlate to different stand conditions based on a species. For example, high densities in Douglas-fir stands relate to a declining condition while in aspen low densities indicate a deteriorating stand condition. For these reasons, high tree densities will generally mean low stand condition. Low tree densities will mean high stand condition.

Status: The current tree density will help determine each stand's condition. A high stand condition is open growth with all strata growing relatively free of competition. A medium stand condition is indicated by moderate tree densities, inter-tree competition, and most stand strata still in a growing condition. A low stand condition is defined by high tree densities with a high potential for insects, diseases, and/or wildfire. Ladder fuels and stand stagnation may be prevalent.

Risk: The relative risk of an insect, disease or lethal fire outbreak due to high tree density or a buildup of ladder fuels and/or understory fuels. A high risk rating would be applied to stands having a high insect or disease hazard rating or a high probability of wildfire based on tree density and/or fuel accumulations. A medium risk is a moderate hazard rating or probability. A low risk rating is for stands having a low hazard rating or probability of an insect or disease outbreak or a wildfire because of tree density and/or fuel buildup.

Opportunity: This is the relative potential of implementing management with either fire or silviculture to improve forest density. A high opportunity has a high potential to reverse the trend toward high density forests or low density aspen stands. A medium opportunity has a medium potential to reduce forest density, while a low opportunity has a low potential to reduce forest density. In the case of aspen, a low opportunity relates to a low potential to increase stand density.

2. Change in forest ecosystem disturbance regimes: shifting frequencies and severity of disturbance regimes i.e. size and frequency of fire, insect, and disease occurrences.

Rationale: changing disturbance patterns can indicate the risk of disturbance related damage and predict the level of an ecosystem's resistance and/or resilience to a disturbance agent. Examples: a shift from a cool, nonlethal, fire regime where most of the overstory vegetation survives to a hot, lethal, fire regime that kills most of the overstory indicating a loss of resistance to fire. The same is true of endemic versus epidemic insect and disease outbreaks.

Status: The current condition of forest disturbance regimes. A high condition means disturbance events have been on a natural cycle keeping vegetation in both a resilient and resistant state. A medium condition means the current fire interval is greater than the natural mean fire interval but not greater than the longest estimated range for the natural regime; insect and disease events are isolated in scale; exotic events have not eliminated the historic vegetative structure, successional stage, or species. A low condition means the current fire interval is greater than the longest estimated natural interval; insect and disease outbreaks are widespread (not isolated); exotic events have eliminated the historic vegetative structure, a successional stage, or a species.

Risk: The likelihood of a catastrophic fire or insect/disease outbreak that eliminates forest islands and acts as a stand replacing event in the more contiguous forest. A high risk means a high probability of catastrophic fire and/or insect and disease outbreak. A medium risk means a moderate probability of a stand-replacing event, while a low risk means a low probability of a stand-replacing event.

Opportunity: The potential to implement immediate management with either fire or silviculture to reestablish historic disturbance intervals. A high opportunity is a high potential for the land to respond to management, reestablishing historic disturbance intervals, while medium and low opportunities denote moderate and low potentials to reestablish the historic disturbance interval.

Figure 14 and 15 show the subbasin's characterization based on status, risk and opportunity for Forest Stand Condition and for the Change in Forest Ecosystem Disturbance Regimes, respectively. Appendix 9 contains the resource tables from which these figures were developed.

Chapter 3. Validation

The validation process compares basin-wide findings in the regional ICBEMP with actual findings at the subbasin scale. This process validates whether the basin-wide issues and trends are really occurring as issues and trends in this particular subbasin. The following Table 3 compares the ICBEMP findings with this subbasin for the resources listed. Most of the ICBEMP findings are consistent and valid for this subbasin. The only exceptions are that there is not presently a high road density in this subbasin for the higher elevation watersheds, and that these watersheds have not been over-harvested.

Table 3. Comparison of ICBEMP Findings to the Medicine Lodge Subbasin

| Resource Heading | ICBEMP Findings | Medicine Lodge Subbasin Findings |
|--|---|--|
| Human Uses | Recreational demand has increased on federal lands, and demand for motorized access has increased as well. | Consistent in this subbasin. |
| Riparian and Wetland Vegetation/Stream Channel | Riparian areas have been altered, from beaver-dominated riparian shrub communities to drier, riparian corridors with less shrubs and more herbaceous communities. | Consistent in this subbasin. |
| Watershed and Water Quality | Many streams now have impaired water quality. Runoff from over-harvested timberlands have affected streams and aquatic habitats. | Consistent in this subbasin for impaired water quality. This subbasin, however, has not been over-harvested. |
| Fisheries | The composition, distribution and density of fish populations have changed significantly, with YCT populations declining. | Consistent in this subbasin. |
| Wildlife | Migratory corridors are being interrupted and core habitats are decreasing and becoming fragmented. | Consistent in this subbasin. |
| Soils | Soil loss through water and wind erosion is a primary concern. Salty soils, alkaline and clayey soils can present problems for healthy rangelands. | Consistent, except that this subbasin does not have salty, alkaline or clayey soils. |
| Rangeland/Weeds | Exotic weeds have increased across the basin. Upland herbaceous species have been declining, with an increase in more decadent stands of sagebrush. | Consistent in this subbasin. |
| Forestry | Tree densities have increased significantly, accompanied with decreasing structural diversity and growth rates. | Consistent in this subbasin. |

Chapter 4. Prioritization

Prioritization Process

The final step in subbasin review is to determine as a group what the priority watersheds are for this subbasin, provide rationale for picking them, and submit a list of actions or recommendations that target these priority watersheds. A wide variety of priority groupings have been done in past reviews. The Lemhi River Subbasin Review listed individual program priority watersheds, grouped priority watersheds and issue priorities (USDI-BLM and USDA-FS, 1999).

The process used in this subbasin review was a three-step approach:

- 1) Combine the Resource Characterization Tables for all resources for all watersheds.
- 2) Meet as a group to use this combined table and by discussing resource values, economic importance and management attention, choose the priority watersheds.
- 3) Meet with the collaborators and agency managers to refine the list of priority watersheds and their actions and recommendations created by the Core Team.

The first step of this process resulted in the table in Appendix 10. Considerations for determining priority watersheds were either high or low resource status, high risks and high opportunities. The priority watersheds chosen were watersheds with a majority of their resources described as high risk but also high opportunity. High restoration opportunities to improve these resources are the key to making progress in improving an entire watershed.

The second step in this process was to discuss as a group and determine by consensus the priority watersheds. Besides Appendix 10, data considered for each watershed were: the amount of federal resources (stream lengths and % watershed area); 303(d)-listed streams; Yellowstone cutthroat trout, sage grouse and other special status species; riparian condition of streams; resource values and their economic importance; highest soil water erosion potential; and grazing conflict issues with bison. The consensus of the group was that there are six (6) multi-program priority watersheds, two (2) watersheds that are a priority only for the rangeland/weeds and soils resources, and nine (9) watersheds that are a priority only for the wildlife, rangeland/weeds and soils programs. Figure 16 shows these six multi-program priority watersheds, and Figures 17 and 18 show the two program-specific priority watersheds.

The third step, meeting with first the Core Team and then the Collaborative Team resulted in the final tables listing proposed actions and recommendations for these priority watersheds. Tables 4-9 list the final recommendations for these multi-program watersheds, while Table 10 and 11 list the two program-specific priority watershed actions. These priority watersheds contain three out of the five 303(d)-listed streams, most of the Yellowstone cutthroat trout headwater streams, most of the nonfunctioning riparian condition streams, the highest erosive soils, the highest weed infestations, most of the bison allotments, most of the highest use recreational areas and most of the over-stocked forested areas, and the one nearly pristine watershed that can also serve as a reference site. Restoration activities recommended in these tables usually cover a 5 year timeframe. Besides these actions and recommendations, a few actions were identified for non-priority watersheds. These include:

1. Monitor and recommend the de-listing of Warm Springs Creek from the 303(d) list to Idaho DEQ.
2. Monitor soil conditions and vegetation recovery/conversion on the Gallagher Peak Burn.

Final Priority Watersheds

The final priority watersheds are in two groups. These two groups contain three maps (Figures 16-18) and each group contains the following priority watersheds:

1. Multi-Program Priority Watersheds:

Irving Creek
 Edie Creek/Cole Canyon
 Indian Creek
 Fritz Creek
 Webber Creek
 Crooked Creek

2. Program-Specific Priority Watersheds for Rangeland/Weeds and Soils:

Medicine Lodge Canyon
 Deep Creek

3. Program-Specific Priority Watersheds for Wildlife, Rangeland/Weeds and Soils:

| | |
|--------------------|-----------------------|
| Deep Creek Bench | Small |
| Blue Creek | Table Butte East/West |
| Warm Springs Creek | Montevideo |
| Lidy Hot Springs | Mud Lake |

**Table 4. Irving Creek Priority Watershed #170402150505
Medicine Lodge Subbasin Review
Final Actions and Recommendations**

| Resource Program | Actions/Recommendations | Implementation |
|-------------------------|--|-----------------------|
| Human Uses | Update existing road inventory and close unauthorized routes not identified in existing LUP. Maintain existing roads and trails at levels identified in Transportation Plan. Monitor impacts. | BLM |
| | Enforce current Travel Plan regulations. Maintain and reconstruct trails to prevent resource damage and address public safety issues. | FS |
| Aquatic/Riparian | Build and maintain protective grazing system for streams, which means grazing WFK Irving Cr. 1 out of 3 yrs. for 7 days, and Upper EFK Irving 2 out of 3 yrs. for 7 days. Build and maintain Lower EFK Irving Cr. pasture fence. Harden and maintain water gap. Manage Lower Irving Cr. for progress towards PFC. Rehab road crossings on tributaries to WFK Irving Cr. | BLM |
| | Perform a Level 2 aquatic and riparian habitat survey (R1/R4) to determine habitat restoration needs. Monitor recovery of the WFK Irving Creek gully and evaluate further restoration needs. Recommend more liberal harvest regulations on brook and rainbow trout to maintain their subdominance in the salmonid community. | FS |
| Wildlife | Protect sage grouse migration habitat through implementation of fire restrictions, appropriate fire control procedures and response levels and potential OHV restrictions. Monitor mule deer and elk habitat use. Monitor visitor use on existing roads for baseline data. | BLM |
| Soils | Encourage and retain maximum ground cover and vegetation cover on steep slopes greater than 30% or 25% on fragile soils (Knep and Argora) associated with land slips to reduce water erosion. Discourage controlled burning or any other practice on these slopes, on these fragile soils that may reduce vegetative cover. Areas of particular concern are the Knep and Argora soil series, that are subject to high natural erosion and associated with historic land slips. | BLM |

| | | |
|-----------------|---|--------|
| Rangeland/Weeds | Treat invasive plants as per the Upper Continental Divide Coordinated Weed Management Area Plan. Implement grazing system and rangeland improvements for progress towards PFC on the WFK and EFK of Irving Creek. | BLM |
| Forest | Inventory the condition and develop plans for the maintenance and/or improvement of Douglas-fir, lodgepole pine, subalpine fir, and aspen stands. Introduce prescribed fire, tree thinning, and harvesting to help meet forestry, recreation, and wildlife needs. | BLM/FS |

**Table 5. Edie Creek/Cole Canyon Priority Watershed #170402150501
Medicine Lodge Subbasin Review
Final Actions and Recommendations**

| Resource Program | Actions/Recommendations | Implementation |
|-------------------------|--|-----------------------|
| Human Uses | Update existing road inventory and close unauthorized routes not identified in existing LUP. Maintain existing roads and trails at levels identified in Transportation Plan. Notify the public of bison grazing locations and provide information on how to safely recreate near bison. Monitor recreation use. Acquire road easement across private land. | BLM |
| | Enforce current Travel Plan regulations. Maintain and reconstruct trails to prevent resource damage and address public safety issues. | FS |
| Aquatic/Riparian | Maintain Upper Edie Creek Riparian Pasture as an exclosure until at or near PFC. Reduce grazing impacts along Lower Edie Creek through duration and other means to improve PFC and recovery rate. Build and maintain protective fence on Cold Creek; monitor trailing use and improve recovery rate. Harden and maintain water gaps. | BLM |
| Wildlife | Protect sage grouse brood rearing and migration habitat through implementation of fire restrictions, appropriate fire control procedures and response levels. The goal is to reduce wildfire disturbance to less than 2000 acres per occurrence. Monitor Canadian lynx, elk and mule deer habitat for human use disturbances. Monitor Canadian lynx habitat use and visitor use on existing roads for baseline data. | BLM |
| Soils | Encourage and retain maximum ground cover and vegetation cover on steep slopes greater than 30% or 25% on fragile soils (Knep and Argora) associated with land slips to reduce water erosion. Discourage controlled burning or any other practice on these slopes, on these fragile soils that may reduce vegetative cover. Areas of particular concern are the Knep and Argora soil series, that are subject to high natural erosion and associated with historic land slips. | BLM |
| Rangeland/Weeds | Treat invasive plants as per the Upper Continental Divide Coordinated Weed Management Area Plan. Implement grazing system and rangeland improvements for progress towards PFC on Cold and Edie Creeks. | BLM |

| | | |
|--------|---|--------|
| Forest | Inventory the condition and develop plans for the maintenance and/or improvement of Douglas-fir, lodgepole pine, subalpine fir, and aspen stands. Introduce prescribed fire, tree thinning, and harvesting to help meet forestry, recreation, and wildlife needs. | BLM/FS |
|--------|---|--------|

**Table 6. Indian Creek Priority Watershed #170402150604
Medicine Lodge Subbasin Review
Final Actions and Recommendations**

| Resource Program | Actions/Recommendations | Implementation |
|-------------------------|---|-----------------------|
| Human Uses | Continue to work with local outfitters in keeping livestock herded away from riparian areas. Update existing road inventory and close unauthorized routes not identified in existing LUP. Maintain existing roads and trails at levels identified in Transportation Plan. | BLM |
| | Enforce current Travel Plan regulations. Maintain and reconstruct trails to prevent resource damage and address public safety issues. | FS |
| Aquatic/Riparian | Maintain and recognize herding and monitor the improving riparian conditions along Cabin Creek and WFK Indian Creek. Replace culvert and improve Cabin Creek road crossing. Maintain high riparian conditions along Upper EFK Indian and investigate sediment loads in Corral Creek and Lower EFK Indian Creek. | BLM |
| | Perform Level 2 aquatic and riparian habitat survey (R1/R4) to determine habitat restoration needs. Promote continued beaver reintroduction into drainage. Recommend a closed beaver trapping season here until populations are completely reestablished. Decommission and stabilize the unnumbered trail that parallels the WFK of the WFK of Indian Creek. Relocate a section and reconstruct drainage along trail #110 where it impacts the stream. Evaluate the need for grazing exclosures along sensitive areas of this stream. | FS |

| | | |
|-----------------|---|--------|
| Wildlife | Protect sage grouse habitat (lek, nesting, brood rearing and migration) through implementation of fire restrictions, appropriate fire control procedures, response levels and potential OHV restrictions. The goal is to reduce wildfire disturbance to less than 1000 acres per occurrence and to maintain OHV use at current levels. Assess wildlife habitat fragmentation extent and cause. Monitor mule deer and elk habitat use and visitor use on existing roads for baseline data. | BLM |
| | Monitor reintroduced beaver population in EFK Indian Creek. Implement the Forest Travel Plan to reduce road density and improve big game security. Maintain and improve big game summer range. Promote sage grouse habitat. | FS |
| Soils | Encourage and retain maximum ground cover and vegetation cover on steep slopes greater than 30% or 25% on fragile soils to reduce water erosion. Discourage controlled burning or any other practice on these slopes, on these fragile soils that may reduce vegetative cover. | BLM |
| | No more than 15% of an activity area may have detrimentally impacted soil to meet the goal of maintaining or improving long term soil productivity and soil hydrologic function. | FS |
| Rangeland/Weeds | Treat invasive plants as per the Upper Continental Divide Coordinated Weed Management Area Plan. Continue to implement grazing management and maintain herding to make progress towards PFC on Cabin Creek and the WFK of Indian Creek. Maintain and improve riparian conditions on EFK of Indian Creek. | BLM |
| Forest | Inventory the condition and develop plans for the maintenance and/or improvement of Douglas-fir, lodgepole pine, subalpine fir, and aspen stands. Introduce prescribed fire, tree thinning, and harvesting to help meet forestry, recreation, and wildlife needs. | BLM/FS |

**Table 7. Crooked Creek Priority Watershed #170402150305
Medicine Lodge Subbasin Review
Final Actions and Recommendations**

| Resource Program | Actions/Recommendations | Implementation |
|-------------------------|--|-----------------------|
| Human Uses | Enforce current Travel Plan regulations. Maintain and reconstruct trails to prevent resource damage and address public safety issues. | FS |
| Aquatic/Riparian | Perform a Level 2 aquatic and riparian habitat survey (R1/R4) to determine habitat restoration needs. Identify additional measures to mitigate FS road impacts that might include road relocation. Continue road improvements to trailhead to minimize road capture and sediment delivery. Evaluate opportunities to place large wood in the stream and to return water to the original streambed in the lower reach. Evaluate the channel restoration project in the channelized reach. | FS |
| Wildlife | Implement the Forest Travel Plan to decrease impacts on the big game winter range. Focus management effort to maintain or improve sage grouse habitat and big game winter range to include Bighorn Sheep habitat. | FS |
| Soils | No more than 15% of an activity area may have detrimentally impacted soil to meet the goal of maintaining or improving long term soil productivity and soil hydrologic function. | FS |
| Rangeland/Weeds | Continue to manage rangelands in a manner that supports maintenance and improvement where needed of upland and riparian vegetation condition. Treat invasive weeds as per the Upper Continental Divide Coordinated Weed Management Area Plan. Eradicate or control leafy spurge, spotted knapweed, poison hemlock and Canada thistle. | FS |
| Forest | Develop and implement a prescribed natural fire plan for the Italian Peaks Recommended Wilderness. Inventory the forest condition and develop plans for timber management to prevent insect/disease epidemics and to enhance wildlife habitat, where necessary. | FS |

**Table 8. Fritz Creek Priority Watershed #170402150503
Medicine Lodge Subbasin Review
Final Actions and Recommendations**

| Resource Program | Actions/Recommendations | Implementation |
|-------------------------|---|-----------------------|
| Human Uses | Enforce current Travel Plan regulations. Maintain and reconstruct trails to prevent resource damage and address public safety issues. Notify the public of bison grazing locations and provide information on how to safely recreate near bison. | FS |
| Aquatic/Riparian | Perform Level 2 aquatic and riparian habitat survey (R1/R4) to determine habitat restoration needs. Monitor bison impacts more closely. Maintain and improve riparian exclosures and water gaps. Construct an additional exclosure on the NFK of Fritz Creek. Relocate corral out of the riparian area. | FS |
| Wildlife | Implement Forest Travel Plan to decrease open road density and improve big game security. Maintain or improve big game and sage grouse summer range. | FS |
| Soils | No more than 15% of an activity area may have detrimentally impacted soil to meet the goal of maintaining or improving long term soil productivity and soil hydrologic function. | FS |
| Rangeland/Weeds | Continue to manage rangelands to improve or maintain upland range condition and riparian vegetation condition in Upper Fritz Creek (from FS Rd. 195 to Fritz Creek Cabin). Treat invasive weeds as per the Upper Continental Divide Coordinated Weed Management Area Plan. Eradicate or control spotted knapweed, Russian knapweed, leafy spurge, musk thistle, black henbane and Canada thistle. | FS |
| Forest | Develop and implement a prescribed natural fire plan for the Italian Peaks Recommended Wilderness. Inventory the forest condition and develop plans for timber management to prevent insect/disease epidemics and to enhance wildlife habitat, where necessary. | FS |

**Table 9. Webber Creek Priority Watershed #170402150502
Medicine Lodge Subbasin Review
Final Actions and Recommendations**

| Resource Program | Actions/Recommendations | Implementation |
|-------------------------|---|-----------------------|
| Human Uses | Enforce current Travel Plan regulations. Maintain and reconstruct trails to prevent resource damage and address public safety issues. Notify the public of bison grazing locations and provide information on how to safely recreate near bison. | FS |
| Aquatic/Riparian | Perform Level 2 aquatic and riparian habitat survey (R1/R4) to determine habitat restoration needs. Maintain high quality aquatic/riparian system as a reference stream for this subbasin. Encourage low impact camping at Webber Lakes. | FS |
| Wildlife | Implement Forest Travel Plan to improve big game security. Maintain or improve big game summer range. | FS |
| Soils | No more than 15% of an activity area may have detrimentally impacted soil to meet the goal of maintaining or improving long term soil productivity and soil hydrologic function. Evaluate and document non-forested vegetation as representative of high seral/healthy soil conditions for the Lemhi-Medicine Lodge Subsection. | FS |
| Rangeland/Weeds | Continue to manage rangelands to improve or maintain upland range condition and riparian vegetation condition. Treat invasive weeds as per the Upper Continental Divide Coordinated Weed Management Area Plan. Eradicate or control spotted knapweed, leafy spurge, black henbane and Canada thistle. | FS |
| Forest | Develop and implement a prescribed natural fire plan for the Italian Peaks Recommended Wilderness. Reintroduce prescribed fire at low elevations (outside the Recommended Wilderness) to reduce stand density, improve stand condition and enhance wildlife habitat. Inventory the forest condition and develop plans for timber management to prevent insect/disease epidemics and to enhance wildlife habitat, where necessary. | FS |

**Table 10. Program Specific Priorities for the Rangeland/Weeds and Soils Programs in
the Medicine Lodge Canyon and Deep Creek Watersheds
Medicine Lodge Subbasin Review
Final Actions and Recommendations**

| Resource Program | Actions/Recommendations | Implementation |
|-------------------------|---|-----------------------|
| Rangeland/Weeds | Treat invasive weeds as per the Upper Continental Divide Coordinated Weed Management Area Plan. Continue to implement the grazing system and rangeland improvements on Deep Creek for progress towards PFC. | BLM |
| Soils | Encourage and retain maximum ground cover and vegetation cover on steep slopes greater than 30% or 25% on fragile soils to reduce water erosion. Discourage controlled burning or any other practice on these slopes, on these fragile soils that may reduce ground cover. Areas of particular concern are on the Argora soil series. | BLM |

**Table 11. Program Specific Priorities for the Wildlife, Rangeland/Weeds and Soils Programs in the Table Butte East/West, Mud Lake, Montevue, Small, Deep Creek Bench, Blue Creek, Lidy Hot Springs and Warm Springs Creek Watersheds
Medicine Lodge Subbasin Review
Final Actions and Recommendations**

| Resource Program | Actions/Recommendations | Implementation |
|-------------------------|---|-----------------------|
| Wildlife | Protect sage grouse habitat (leks, nesting, brood rearing and migration) through implementation of fire restrictions, appropriate fire control procedures and response levels, and possible OHV restrictions. The goal is to reduce wildfire disturbance of habitat to less than 1,000 acres per occurrence and to maintain OHV use at current levels. | BLM |
| Rangeland/Weeds | Treat invasive plants as per the Upper Continental Divide Coordinated Weed Management Area Plan. Special emphasis will be placed on the Table Butte East/West and Mud Lake watersheds to contain knapweed, not allowing it to spread into the interior regions. Continue to implement the grazing system and rangeland improvements on the Deep Creek Bench. | BLM |
| Soils | Encourage and maintain best management practices to retain maximum ground cover and vegetation cover on sandy soils to reduce wind erosion. Discourage controlled burning, improper grazing, plowing or any other practice on these susceptible soils that would cause the reduction in vegetative cover to a level where wind erosion rates exceed 5 tons/acre/year. | BLM |

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Appendix 1. Medicine Lodge Subbasin Ownership by Watershed

| Watershed | Landowner Type (in square miles) | | | | | Totals |
|------------------------|----------------------------------|------|-------|---------|-----|--------|
| | USFS | BLM | State | Private | DOE | |
| Table Butte East | 0 | 44.8 | 2.4 | 8.0 | 0 | 55.1 |
| Monteview | 0 | 2.4 | 0 | 29.2 | 9.4 | 41.0 |
| Table Butte West | 0 | 31.5 | 1.2 | 58.8 | 2.1 | 93.6 |
| Mud Lake | 0 | 26.7 | 14.2 | 38.9 | 1.2 | 81.0 |
| Small | 0 | 11.2 | 1.6 | 36.8 | 0 | 49.6 |
| Blue Creek | 0 | 18.6 | 1.1 | 3.2 | 0 | 22.9 |
| Deep Creek | 4.8 | 24.9 | 2.8 | 0.6 | 0 | 33.1 |
| Deep Creek Bench | 0 | 30.7 | 1.7 | 10.8 | 0 | 43.3 |
| Lidy Hot Springs | 0 | 18.0 | 2.2 | 28.3 | 0 | 48.4 |
| Campbell Gulch | 2.4 | 4.9 | 0.3 | 2.8 | 0 | 10.5 |
| Warm Springs Creek | 14.8 | 22.9 | 1.5 | 10.7 | 0 | 49.9 |
| Nicholia Canyon | 13.7 | 0 | 0 | 0 | 0 | 13.7 |
| Crooked Creek | 21 | 0 | 0 | 0.3 | 0 | 21.3 |
| Gallagher Canyon | 18.8 | 9.9 | 0.5 | 3.7 | 0 | 33.0 |
| Chandler Canyon | 23.4 | 0 | 0 | 0 | 0 | 23.4 |
| Edie Creek/Cole Canyon | 4.3 | 23.2 | 0.4 | 4.4 | 0 | 32.3 |
| Webber Creek | 20.6 | 1.8 | 0 | 2.8 | 0 | 25.2 |

| Watershed | Landowner Type (in square miles) | | | | | Totals |
|--------------------------|---|------------|--------------|----------------|------------|---------------|
| | USFS | BLM | State | Private | DOE | |
| Fritz Creek | 14.8 | 0.2 | 0 | 1.4 | 0 | 16.4 |
| Divide Creek | 33.0 | 4.9 | 0 | 0.8 | 0 | 38.7 |
| Irving Creek | 7.2 | 6.2 | 1.0 | 3.3 | 0 | 17.7 |
| Medicine Lodge Canyon | 0 | 17.4 | 1.6 | 7.7 | 0 | 26.7 |
| Lower Middle Creek | 1.5 | 23 | 2.0 | 5.8 | 0 | 32.3 |
| Upper Middle Creek | 11.9 | 1.0 | 0.2 | 0.3 | 0 | 13.4 |
| Indian Creek | 18.5 | 17.5 | 0.9 | 12.6 | 0 | 49.5 |
| Totals | 210 | 342 | 36 | 271 | 13 | 872 |

Appendix 2. SUMMARY OF MEDICINE LODGE STREAMS
RIPARIAN CONDITION
BLM and USFS

| Stream | Owner | *Health | 6th Level HUC | HUC Name | Rosgen Channel Type | Trend | Community Type (Hansen 1997; Hansen 1995) | Miles |
|-----------------------------|--------------|----------------|------------------------------|------------------------------|------------------------------------|--------------|--|--------------|
| Black Canyon Creek | BLM | PFC | 0504 | Divide Creek | NA | Static | UPLAND TYPE | 0.52 |
| Cabin Creek | BLM | FAR | 0604 | Indian Creek | B6c, C6b | Up | SALGEY CT, POPTRE CORTSO HT | 1.32 |
| Cabin Creek (Trib. to) | BLM | NF | 0604 | Indian Creek | A4 | Unk | SALGEY/CARROS HT | 1.0 |
| Cold Creek | BLM | FAR | 0501 | Edie Creek/Cole Canyon | G4 | Up | SALGEY CT | 0.85 |
| Corral Creek | BLM | FAR | 0604 | Indian Creek | A2a | Static | SALGEY CT | 0.5 |
| Corral Creek | USFS | NF | 0604 | Indian Creek | | Down | | 4.5 |
| Crooked Creek | USFS | FAR | 0305 | Crooked Creek | | Static | | 7.8 |
| Dead Horse Creek | BLM | FAR | 0602 | Lower Middle Creek | | Static | | 1.25 |
| Deep Creek | BLM | NF | 0203 | Deep Creek | C | Static | POAPRA CT | 5.17 |
| Deep Creek (South Fork) | BLM | NF | 0203 | Deep Creek | C6 | Down | SALGEY CT, POAPRA CT | 4.34 |
| Divide Creek | USFS | FAR | 0504 | Divide Creek | | Static | | 9.5 |
| Dry Creek | BLM | FAR | 0602 | Lower Middle Creek | C4, C3 | Static | SALGEY CT, UPLAND TYPE | 1.16 |
| Dry Creek | USFS | FAR | 0602 | Lower Middle Creek | | Static | | 1.0 |
| Edie Creek | BLM | FAR | 0501 | Edie Creek/Cole Canyon | A4, B4 | Up | SALGEY CT, SALGEY/CARROS HT | 4.81 |
| Fritz Creek (North Fork) | USFS | PFC | 0503 | Fritz Creek | | Up | | 5.1 |

| Stream | Owner | *Health | 6th Level HUC | HUC Name | Rosgen Channel Type | Trend | Community Type (Hansen 1997; Hansen 1995) | Miles |
|----------------------------|--------------|----------------|----------------------|-----------------------|----------------------------|--------------|--|--------------|
| Grouse Canyon | USFS | FAR | 0303 | Warm Springs Creek | | Up | | 2.1 |
| Grouse Canyon | BLM | FAR | 0303 | Warm Springs Creek | | Unk | | 0.5 |
| Horse Creek | BLM | PFC | 0504 | Divide Creek | A4, G4 | Up | PSEMEN/CORSTO HT, SALGEY CT | 1.4 |
| Horse Creek | USFS | FAR | 0504 | Divide Creek | | Up | | 1.8 |
| Indian Creek (East Fork) | BLM | PFC | 0604 | Indian Creek | B3, B4c | Up | SALGEY CT | 4.1 |
| Indian Creek (West Fork) | BLM | FAR | 0604 | Indian Creek | B | Up | SALGEY CT, SALGEY/CARROS HT | 1.91 |
| Indian Creek (Trib. To WF) | BLM | NF | 0604 | Indian Creek | A4 | Unk | SALGEY/CARROS HT | 2.06 |
| Indian Creek (West Fork) | USFS | PFC | 0604 | Indian Creek | | Static | | 4.8 |
| Irving Creek (East Fork) | BLM | FAR | 0505 | Irving Creek | B4a | Static | SALGEY CT, POAPRA CT | 1.6 |
| Irving Creek (West Fork) | BLM | NF | 0505 | Irving Creek | G4, B4 | Down | SALGEY CT | 1.09 |
| Irving Creek (West Fork) | USFS | Unk | 0505 | Irving Creek | | Static | | 0.5 |
| Irving Creek (main) | BLM | FAR | 0505 | Irving Creek | | Up | | 0.3 |
| Lake Hollow Creek | BLM | FAR | 0601 | Medicine Lodge Canyon | | Static | | 1.25 |
| McNeary Creek | USFS | Unk | 0502 | Webber Creek | | Static | | 2.0 |
| Medicine Lodge Creek | BLM | FAR | 0601 | Medicine Lodge Canyon | B4, E4, G4 | Unk | SALGEY CT, BETOCC CT | 2.33 |
| Middle Creek | USFS | FAR | 0603 | Upper Middle Creek | C, E | Static | | 2.00 |

| Stream | Owner | *Health | 6th Level HUC | HUC Name | Rosgen Channel Type | Trend | Community Type (Hansen 1997; Hansen 1995) | Miles |
|--------------------|--------------|----------------|----------------------|--------------------|----------------------------|--------------|--|--------------|
| Middle Creek | BLM | PFC | 0603 | Upper Middle Creek | C, E | Static | | 0.6 |
| Middle Creek | BLM | FAR | 0602 | Lower Middle Creek | G4, F4 | Unk | BETOCC CT, SALGEY CT | 2.61 |
| Myers Creek | USFS | FAR | 0305 | Crooked Creek | | Down | | 3.4 |
| Warm Creek | BLM | FAR | 0504 | Divide Creek | B5c | Unk | UPLAND TYPE | 0.71 |
| Warm Creek | USFS | FAR | 0504 | Divide Creek | | Static | | 1.6 |
| Warm Springs Creek | BLM | NF | 0303 | Warm Springs Creek | A, B | Static | SALBEB CT | 1.77 |
| Webber Creek | USFS | PFC | 0502 | Webber Creek | | Static | | 9.3 |

- Health ratings are derived from the Proper Functioning Condition (PFC) process (Hansen 1993-1999; Idaho Falls BLM 1997-2000) developed in cooperation with the Montana Riparian Wetland Association of the University of Montana.

Appendix 3. Recreation Uses (N/A = Not Applicable)

| 6th Level HUC Name | Status | | | | Risk | | | | Opportunity | | | |
|---------------------|--------|-----|-----|-----|------|-----|-----|-----|-------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Montevieu | | | x | | | | x | | | | x | |
| Table Butte West | | x | | | | x | | | | | x | |
| Mud Lake | | x | | | | x | | | | x | | |
| Small | | x | | | | | x | | | | x | |
| Blue Creek | | x | | | | | x | | | | x | |
| Deep Creek | | x | | | | x | | | | | x | |
| Deep Creek Bench | | x | | | | | x | | | x | | |
| Lidy Hot Springs | | x | | | | x | | | | x | | |
| Campbell Gulch | | x | | | | | x | | | | x | |
| Warm Springs Creek | x | | | | x | | | | | x | | |
| Nicholia Canyon | | x | | | | | x | | | | x | |
| Crooked Creek | | x | | | | x | | | | | x | |
| Gallagher Canyon | | x | | | | | x | | | | x | |
| Chandler Canyon | | x | | | | | x | | | | x | |
| Edie Creek/Cole Cyn | x | | | | x | | | | | x | | |
| Webber Creek | x | | | | x | | | | x | | | |
| Fritz Creek | x | | | | x | | | | x | | | |
| Divide Creek | x | | | | x | | | | x | | | |
| Irving Creek | x | | | | x | | | | x | | | |
| Medicine Lodge Cyn | x | | | | x | | | | | x | | |
| Lower Middle Creek | x | | | | x | | | | | x | | |
| Upper Middle Creek | x | | | | | x | | | | x | | |
| Indian Creek | x | | | | x | | | | | x | | |
| Table Butte East | x | | | | | | x | | | | x | |

Appendix 3. (Continued) Motorized Access (N/A = Not Applicable)

| 6th Level HUC Name | Status | | | | Risk | | | | Opportunity | | | |
|---------------------|--------|-----|-----|-----|------|-----|-----|-----|-------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Monteview | x | | | | x | | | | x | | | |
| Table Butte West | x | | | | x | | | | x | | | |
| Mud Lake | | x | | | x | | | | x | | | |
| Small | x | | | | x | | | | x | | | |
| Blue Creek | x | | | | | x | | | x | | | |
| Deep Creek | x | | | | | | x | | x | | | |
| Deep Creek Bench | | x | | | | x | | | x | | | |
| Lidy Hot Springs | | | x | | x | | | | x | | | |
| Campbell Gulch | x | | | | x | | | | x | | | |
| Warm Springs Creek | x | | | | | x | | | x | | | |
| Nicholia Canyon | | x | | | | | x | | x | | | |
| Crooked Creek | | x | | | | | x | | x | | | |
| Gallagher Canyon | | x | | | | | x | | x | | | |
| Chandler Canyon | | | x | | | | x | | x | | | |
| Edie Creek/Cole Cyn | | x | | | | | x | | x | | | |
| Webber Creek | | x | | | | | x | | x | | | |
| Fritz Creek | | x | | | | | x | | x | | | |
| Divide Creek | | | x | | | | x | | x | | | |
| Irving Creek | | x | | | | x | | | x | | | |
| Medicine Lodge Cyn | | x | | | | x | | | x | | | |
| Lower Middle Creek | x | | | | x | | | | x | | | |
| Upper Middle Creek | | | x | | | | x | | x | | | |
| Indian Creek | | x | | | | x | | | x | | | |
| Table Butte East | | x | | | | x | | | x | | | |

**Appendix 4. Riparian/Wetland Vegetation and Stream Channel Functionality
(N/A = Not Applicable)**

| 6th Level HUC Name | Status | | | | Risk | | | | Opportunity | | | |
|---------------------|--------|-----|-----|-----|------|-----|-----|-----|-------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Montevieu | | | | x | | | | x | | | | x |
| Table Butte West | | | | x | | | | x | | | | x |
| Mud Lake | | | | x | | | | x | | | | x |
| Small | | | | x | | | | x | | | | x |
| Blue Creek | | | | x | | | | x | | | | x |
| Deep Creek | | | x | | x | | | | | x | | |
| Deep Creek Bench | | | | x | | | | x | | | | x |
| Lidy Hot Springs | | | | x | | | | x | | | | x |
| Campbell Gulch | | | | x | | | | x | | | | x |
| Warm Springs Creek | | | x | | | x | | | x | | | |
| Nicholia Canyon | | | | x | | | | x | | | | x |
| Crooked Creek | | x | | | | x | | | x | | | |
| Gallagher Canyon | | | | x | | | | x | | | | x |
| Chandler Canyon | | | | x | | | | x | | | | x |
| Edie Creek/Cole Cyn | | x | | | | x | | | x | | | |
| Webber Creek | x | | | | | | x | | | | x | |
| Fritz Creek | x | | | | | | x | | | | x | |
| Divide Creek | | x | | | | | x | | | x | | |
| Irving Creek | | | x | | x | | | | x | | | |
| Medicine Lodge Cyn | | x | | | x | | | | | x | | |
| Lower Middle Creek | | x | | | x | | | | | x | | |
| Upper Middle Creek | | x | | | x | | | | | | x | |
| Indian Creek | | x | | | x | | | | | x | | |
| Table Butte East | | | | x | | | | x | | | | x |

Appendix 4. (Continued) Water Quality Table
(N/A = Not Applicable; see explanation below for footnotes)

| 6th Level HUC Name | Status | | | | Risk | | | | Opportunity | | | |
|---------------------|---------|--------|---------|-----|------|-----|-----|-----|-------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Montevieu | | | | X | | | | X | | | | X |
| Table Butte West | | | | X | | | | X | | | | X |
| Mud Lake | | | | X | | | | X | | | | X |
| Small | | | | X | | | | X | | | | X |
| Blue Creek | | | | X | | | | X | | | | X |
| Deep Creek | | | 1,2,5,9 | | X | | | | | X | | |
| Deep Creek Bench | | | | X | | | | X | | | | X |
| Lidy Hot Springs | | | | X | | | | X | | | | X |
| Campbell Gulch | | | | X | | | | X | | | | X |
| Warm Springs Creek | | | 1-3,8 | | X | | | | | | X | |
| Nicholia Canyon | | | | X | | | | X | | | | X |
| Crooked Creek | | 1,4,9 | | | X | | | | | X | | |
| Gallagher Canyon | | | | X | | | | X | | | | X |
| Chandler Canyon | | | | X | | | | X | | | | X |
| Edie Creek/Cole Cyn | | 1-9 | | | X | | | | X | | | |
| Webber Creek | 1,4,5,9 | | | | | | X | | | | X | |
| Fritz Creek | | 1,5-9 | | | | X | | | | X | | |
| Divide Creek | | 1-4, 9 | | | | X | | | | X | | |
| Irving Creek | | | 1-9 | | X | | | | | X | | |
| Medicine Lodge Cyn | | 1-9 | | | X | | | | | X | | |
| Lower Middle Creek | | 1-4, 9 | | | | X | | | | | X | |
| Upper Middle Creek | | 1-4, 9 | | | | X | | | | X | | |
| Indian Creek | | 1-5, 9 | | | | X | | | X | | | |
| Table Butte East | | | | X | | | | X | | | | X |

Source of Rating Information:

Federal agency data may include: PFC inventory and rating(1), water temperature(2), water quality(3), fishery habitat surveys(4) and upland information(5).

State agency data may include: streambank stability(6), PFC rating(7), BURP data (8) and water temperature (9).

Appendix 5. Fishery Habitat Integrity (N/A = Not Applicable)

| 6th Level HUC Name | Status | | | | Risk | | | | Opportunity | | | |
|---------------------|--------|-----|-----|-----|------|-----|-----|-----|-------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Montevieu | | | | X | | | | X | | | | X |
| Table Butte West | | | | X | | | | X | | | | X |
| Mud Lake | | | | X | | | | X | | | | X |
| Small | | | | X | | | | X | | | | X |
| Blue Creek | | | | X | | | | X | | | | X |
| Deep Creek | | | | X | | | | X | | | | X |
| Deep Creek Bench | | | | X | | | | X | | | | X |
| Lidy Hot Springs | | | | X | | | | X | | | | X |
| Campbell Gulch | | | | X | | | | X | | | | X |
| Warm Springs Creek | | | | X | | | | X | | | | X |
| Nicholia Canyon | | | | X | | | | X | | | | X |
| Crooked Creek | | X | | | X | | | | | X | | |
| Gallagher Canyon | | | | X | | | | X | | | | X |
| Chandler Canyon | | | | X | | | | X | | | | X |
| Edie Creek/Cole Cyn | | | X | | X | | | | | X | | |
| Webber Creek | | X | | | | X | | | | X | | |
| Fritz Creek | | X | | | | X | | | | X | | |
| Divide Creek | | X | | | | X | | | | X | | |
| Irving Creek | | | X | | | X | | | X | | | |
| Medicine Lodge Cyn | | X | | | | X | | | | | X | |
| Lower Middle Creek | | | X | | | X | | | X | | | |
| Upper Middle Creek | | X | | | | X | | | | X | | |
| Indian Creek | | X | | | | X | | | | X | | |
| Table Butte East | | | | X | | | | X | | | | X |

**Appendix 5. (Continued) Special Status Species - Yellowstone Cutthroat Trout
(N/A = Not Applicable)**

| 6th Level HUC Name | Status | | | | Risk | | | | Opportunity | | | |
|---------------------|--------|-----|-----|-----|------|-----|-----|-----|-------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Monteview | | | | X | | | | X | | | | X |
| Table Butte West | | | | X | | | | X | | | | X |
| Mud Lake | | | | X | | | | X | | | | X |
| Small | | | | X | | | | X | | | | X |
| Blue Creek | | | | X | | | | X | | | | X |
| Deep Creek | | | | X | | | | X | | | | X |
| Deep Creek Bench | | | | X | | | | X | | | | X |
| Lidy Hot Springs | | | | X | | | | X | | | | X |
| Campbell Gulch | | | | X | | | | X | | | | X |
| Warm Springs Creek | | | | X | | | | X | | | | X |
| Nicholia Canyon | | | | X | | | | X | | | | X |
| Crooked Creek | | X | | | | X | | | X | | | |
| Gallagher Canyon | | | | X | | | | X | | | | X |
| Chandler Canyon | | | | X | | | | X | | | | X |
| Edie Creek/Cole Cyn | | | X | | X | | | | | | X | |
| Webber Creek | | | X | | X | | | | | X | | |
| Fritz Creek | | | X | | X | | | | | X | | |
| Divide Creek | | | X | | X | | | | | | X | |
| Irving Creek | | X | | | X | | | | | | X | |
| Medicine Lodge Cyn | | X | | | | X | | | | | X | |
| Lower Middle Creek | | | X | | X | | | | | | X | |
| Upper Middle Creek | | X | | | | X | | | | X | | |
| Indian Creek | | X | | | | X | | | | X | | |
| Table Butte East | | | | X | | | | X | | | | X |

Appendix 6. Wildlife Disturbance Table

| 6th Level HUC Name | Status | | | Risk | | | Opportunity | | |
|---------------------|--------|-----|-----|------|-----|-----|-------------|-----|-----|
| | High | Med | Low | High | Med | Low | High | Med | Low |
| Montevieu | x | | | x | | | | | x |
| Table Butte West | x | | | x | | | | | x |
| Mud Lake | | x | | x | | | | | x |
| Small | x | | | x | | | | | x |
| Blue Creek | x | | | x | | | | | x |
| Deep Creek | x | | | x | | | | | x |
| Deep Creek Bench | | x | | | x | | | | x |
| Lidy Hot Springs | | | x | x | | | | | x |
| Campbell Gulch | x | | | x | | | | | x |
| Warm Springs Creek | x | | | x | | | | | x |
| Nicholia Canyon | | x | | x | | | x | | |
| Crooked Creek | | x | | x | | | x | | |
| Gallagher Canyon | | x | | x | | | x | | |
| Chandler Canyon | | | x | x | | | x | | |
| Edie Creek/Cole Cyn | | x | | x | | | | | x |
| Webber Creek | | x | | x | | | x | | |
| Fritz Creek | | x | | | x | | x | | |
| Divide Creek | | | x | | x | | x | | |
| Irving Creek | | x | | x | | | | x | |
| Medicine Lodge Cyn | | x | | x | | | | | x |
| Lower Middle Creek | x | | | x | | | | | x |
| Upper Middle Creek | | | x | x | | | x | | |
| Indian Creek | | x | | x | | | x | | |
| Table Butte East | | x | | x | | | | | x |

Appendix 6. (Continued) Wildlife Connectivity/Core Habitat Table

| 6th Level HUC Name | Status | | | Risk | | | Opportunity | | |
|---------------------|--------|-----|-----|------|-----|-----|-------------|-----|-----|
| | High | Med | Low | High | Med | Low | High | Med | Low |
| Monteview | | | x | x | | | | | x |
| Table Butte West | | | x | x | | | | | x |
| Mud Lake | | | x | x | | | | | x |
| Small | | | x | x | | | | | x |
| Blue Creek | | | x | x | | | | | x |
| Deep Creek | | | x | x | | | | | x |
| Deep Creek Bench | | | x | x | | | | | x |
| Lidy Hot Springs | | | x | x | | | | | x |
| Campbell Gulch | | | x | x | | | | | x |
| Warm Springs Creek | | | x | x | | | | x | |
| Nicholia Canyon | | | x | x | | | x | | |
| Crooked Creek | | x | | x | | | x | | |
| Gallagher Canyon | | x | | | x | | | x | |
| Chandler Canyon | | x | | | x | | | x | |
| Edie Creek/Cole Cyn | | | x | x | | | | | x |
| Webber Creek | | x | | | x | | x | | |
| Fritz Creek | | x | | | x | | x | | |
| Divide Creek | x | | | x | | | x | | |
| Irving Creek | | | x | | x | | x | | |
| Medicine Lodge Cyn | | | x | x | | | | | x |
| Lower Middle Creek | | | x | x | | | | | x |
| Upper Middle Creek | | x | | x | | | x | | |
| Indian Creek | | x | | x | | | | x | |
| Table Butte East | | | x | x | | | | | x |

Appendix 6. (Continued) Wildlife Special Status Terrestrial Species Habitat Table

| 6th Level HUC Name | Status | | |
|---------------------|--------|-----|-----|
| | High | Med | Low |
| Montevideo | X | | |
| Table Butte West | X | | |
| Mud Lake | X | | |
| Small | X | | |
| Blue Creek | | X | |
| Deep Creek | | X | |
| Deep Creek Bench | | | X |
| Lidy Hot Springs | | | X |
| Campbell Gulch | | | X |
| Warm Springs Creek | | X | |
| Nicholia Canyon | | X | |
| Crooked Creek | | X | |
| Gallagher Canyon | | X | |
| Chandler Canyon | | X | |
| Edie Creek/Cole Cyn | | X | |
| Webber Creek | | X | |
| Fritz Creek | | X | |
| Divide Creek | X | | |
| Irving Creek | | X | |
| Medicine Lodge Cyn | | X | |
| Lower Middle Creek | | | X |
| Upper Middle Creek | | X | |
| Indian Creek | | | X |
| Table Butte East | X | | |

**Appendix 7. Soil Erosion and Loss Table (Erosion Sources: A= Wind; S= Slips;
W= Water)**

| 6th Level HUC Name | Status | | | Risk | | | Opportunity | | |
|---------------------|--------|------|-----|------|------|-----|-------------|------|------|
| | High | Med | Low | High | Med | Low | High | Med | Low |
| Montevieu | A | | | A | | | | A | |
| Table Butte West | | A | | | A | | | | A |
| Mud Lake | A | | | A | | | | A | |
| Small | | A | | | A | | | | A |
| Blue Creek | | W | | | W | | | | W |
| Deep Creek | W | | | W | | | | W | |
| Deep Creek Bench | | W | | | W | | | | W |
| Lidy Hot Springs | | W | | | W | | | | W |
| Campbell Gulch | | W | | | W | | | | W |
| Warm Springs Creek | W | | | W | | | | W | |
| Nicholia Canyon | W | | | W | | | | W | |
| Crooked Creek | | W | | | W | | | | W |
| Gallagher Canyon | | W | | | W | | | | W |
| Chandler Canyon | | W | | | W | | | | W |
| Edie Creek/Cole Cyn | S; W | | | S; W | | | | S; W | |
| Webber Creek | S | W | | S | W | | | S | W |
| Fritz Creek | | W | | | W | | | | W |
| Divide Creek | W | | | W | | | | W | |
| Irving Creek | S; W | | | S; W | | | | S; W | |
| Medicine Lodge Cyn | W | | | W | | | | W | |
| Lower Middle Creek | | W | | | W | | | | W |
| Upper Middle Creek | | S; W | | | S; W | | | | S; W |
| Indian Creek | | W | | | W | | | | W |
| Table Butte East | A | | W | A | | W | | A | W |

Appendix 8. Rangeland Condition Table (N/A = Not Applicable)

| 6th Level HUC Name | Status | | | | Risk | | | | Opportunity | | | |
|---------------------|--------|-----|-----|-----|------|-----|-----|-----|-------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Montevieu | x | | | | | x | | | | x | | |
| Table Butte West | x | | | | | x | | | | x | | |
| Mud Lake | x | | | | x | | | | | x | | |
| Small | x | | | | | x | | | | x | | |
| Blue Creek | x | | | | x | | | | | x | | |
| Deep Creek | x | | | | x | | | | | x | | |
| Deep Creek Bench | | x | | | | x | | | | x | | |
| Lidy Hot Springs | x | | | | | x | | | | x | | |
| Campbell Gulch | | x | | | | x | | | x | | | |
| Warm Springs Creek | | x | | | | x | | | x | | | |
| Nicholia Canyon | x | | | | | | x | | | | x | |
| Crooked Creek | | x | | | | x | | | x | | | |
| Gallagher Canyon | x | | | | | x | | | | x | | |
| Chandler Canyon | | x | | | | x | | | | | x | |
| Edie Creek/Cole Cyn | x | | | | | x | | | x | | | |
| Webber Creek | | x | | | | x | | | | x | | |
| Fritz Creek | x | | | | | | x | | | | x | |
| Divide Creek | | x | | | | x | | | | x | | |
| Irving Creek | x | | | | | x | | | x | | | |
| Medicine Lodge Cyn | x | | | | x | | | | | x | | |
| Lower Middle Creek | x | | | | x | | | | x | | | |
| Upper Middle Creek | | x | | | | x | | | | x | | |
| Indian Creek | x | | | | | x | | | | x | | |
| Table Butte East | x | | | | x | | | | x | | | |

Appendix 9. Forest Stand Condition Table (N/A = Not Applicable)

| 6th Level HUC Name | Status | | | | Risk | | | | Opportunity | | | |
|---------------------|--------|-----|-----|-----|------|-----|-----|-----|-------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Montevieu | | | | X | | | | X | | | | X |
| Table Butte West | | | | X | | | | X | | | | X |
| Mud Lake | | | | X | | | | X | | | | X |
| Small | | | | X | | | | X | | | | X |
| Blue Creek | | | | X | | | | X | | | | X |
| Deep Creek | | | X | | X | | | | X | | | |
| Deep Creek Bench | | | | X | | | | X | | | | X |
| Lidy Hot Springs | | | | X | | | | X | | | | X |
| Campbell Gulch | | | | X | | | | X | | | | X |
| Warm Springs Creek | | | X | | X | | | | X | | | |
| Nicholia Canyon | | | X | | X | | | | X | | | |
| Crooked Creek | | | X | | X | | | | X | | | |
| Gallagher Canyon | X | | | | | | X | | | | X | |
| Chandler Canyon | | | X | | X | | | | X | | | |
| Edie Creek/Cole Cyn | | | X | | X | | | | X | | | |
| Webber Creek | | | X | | X | | | | X | | | |
| Fritz Creek | | | X | | X | | | | X | | | |
| Divide Creek | | | X | | X | | | | X | | | |
| Irving Creek | | | X | | X | | | | X | | | |
| Medicine Lodge Cyn | | | | X | | | | X | | | | X |
| Lower Middle Creek | | | X | | X | | | | X | | | |
| Upper Middle Creek | | | X | | X | | | | X | | | |
| Indian Creek | | | X | | X | | | | X | | | |
| Table Butte East | | | | X | | | | X | | | | X |

Appendix 9. (Continued) Change in Forest Ecosystem Disturbance Regimes Table
(N/A = Not Applicable)

| 6th Level HUC Name | Status | | | | Risk | | | | Opportunity | | | |
|---------------------|--------|-----|-----|-----|------|-----|-----|-----|-------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Montevieu | | | | x | | | | x | | | | x |
| Table Butte West | | | | x | | | | x | | | | x |
| Mud Lake | | | | x | | | | x | | | | x |
| Small | | | | x | | | | x | | | | x |
| Blue Creek | | | | x | | | | x | | | | x |
| Deep Creek | | x | | | x | | | | x | | | |
| Deep Creek Bench | | | | x | | | | x | | | | x |
| Lidy Hot Springs | | | | x | | | | x | | | | x |
| Campbell Gulch | | | | x | | | | x | | | | x |
| Warm Springs Creek | | x | | | x | | | | x | | | |
| Nicholia Canyon | | x | | | x | | | | x | | | |
| Crooked Creek | | x | | | x | | | | x | | | |
| Gallagher Canyon | | x | | | x | | | | x | | | |
| Chandler Canyon | | x | | | x | | | | x | | | |
| Edie Creek/Cole Cyn | | x | | | x | | | | x | | | |
| Webber Creek | | x | | | x | | | | x | | | |
| Fritz Creek | | x | | | x | | | | x | | | |
| Divide Creek | | x | | | x | | | | x | | | |
| Irving Creek | | x | | | x | | | | x | | | |
| Medicine Lodge Cyn | | | | x | | | | x | | | | x |
| Lower Middle Creek | | x | | | x | | | | x | | | |
| Upper Middle Creek | | x | | | x | | | | x | | | |
| Indian Creek | | x | | | x | | | | x | | | |
| Table Butte East | | | | x | | | | x | | | | x |

Appendix 10. Combined Resource Characterization Table for All Resources
(N/A = Not Applicable)

| 6th Level HUC Name | Status (sum = 13) | | | | Risk (sum = 12) | | | | Opportunity (sum = 12) | | | |
|---------------------|-------------------|-----|-----|-----|-----------------|-----|-----|-----|------------------------|-----|-----|-----|
| | High | Med | Low | N/A | High | Med | Low | N/A | High | Med | Low | N/A |
| Montevieu | 5 | 0 | 2 | 6 | 4 | 1 | 1 | 6 | 1 | 2 | 3 | 6 |
| Table Butte West | 4 | 2 | 1 | 6 | 3 | 3 | 0 | 6 | 1 | 1 | 4 | 6 |
| Mud Lake | 3 | 3 | 1 | 6 | 5 | 1 | 0 | 6 | 1 | 3 | 2 | 6 |
| Small | 4 | 2 | 1 | 6 | 3 | 2 | 1 | 6 | 1 | 1 | 4 | 6 |
| Blue Creek | 3 | 3 | 1 | 6 | 3 | 3 | 1 | 6 | 1 | 1 | 4 | 6 |
| Deep Creek | 4 | 3 | 4 | 2 | 8 | 2 | 1 | 2 | 3 | 4 | 3 | 2 |
| Deep Creek Bench | 0 | 5 | 2 | 6 | 1 | 4 | 1 | 6 | 1 | 2 | 3 | 6 |
| Lidy Hot Springs | 1 | 2 | 4 | 6 | 3 | 3 | 0 | 6 | 1 | 2 | 3 | 6 |
| Campbell Gulch | 2 | 3 | 2 | 6 | 3 | 2 | 1 | 6 | 2 | 0 | 4 | 6 |
| Warm Springs Creek | 4 | 3 | 4 | 2 | 7 | 2 | 1 | 2 | 5 | 3 | 2 | 2 |
| Nicholia Canyon | 2 | 5 | 2 | 4 | 5 | 1 | 2 | 4 | 5 | 1 | 2 | 4 |
| Crooked Creek | 0 | 12 | 1 | 0 | 6 | 5 | 1 | 0 | 8 | 2 | 2 | 0 |
| Gallagher Canyon | 2 | 7 | 0 | 4 | 2 | 3 | 3 | 4 | 3 | 2 | 3 | 4 |
| Chandler Canyon | 0 | 6 | 3 | 4 | 3 | 3 | 2 | 4 | 4 | 1 | 3 | 4 |
| Edie Creek/Cole Cyn | 3 | 5 | 4 | 0 | 9 | 1 | 1 | 0 | 6 | 3 | 3 | 0 |
| Webber Creek | 3 | 7 | 2 | 0 | 5 | 4 | 3 | 0 | 7 | 3 | 2 | 0 |
| Fritz Creek | 3 | 7 | 2 | 0 | 4 | 5 | 3 | 0 | 7 | 2 | 3 | 0 |
| Divide Creek | 4 | 5 | 3 | 0 | 6 | 4 | 2 | 0 | 6 | 5 | 1 | 0 |
| Irving Creek | 3 | 4 | 5 | 0 | 8 | 4 | 0 | 0 | 8 | 3 | 1 | 0 |
| Medicine Lodge Cyn | 3 | 5 | 2 | 2 | 7 | 3 | 0 | 2 | 1 | 5 | 4 | 2 |
| Lower Middle Creek | 3 | 4 | 5 | 0 | 9 | 3 | 0 | 0 | 5 | 2 | 5 | 0 |
| Upper Middle Creek | 1 | 9 | 2 | 0 | 5 | 6 | 1 | 0 | 5 | 5 | 2 | 0 |
| Indian Creek | 2 | 8 | 2 | 0 | 6 | 6 | 0 | 0 | 5 | 6 | 1 | 0 |
| Table Butte East | 4 | 1 | 1 | 6 | 4 | 1 | 1 | 6 | 2 | 1 | 3 | 6 |